OSTC – MK2 / 2N
Custom Functions Description
Based on Firmware Version 2.57

70 Custom Functions

Versions

Date	Author	Firmware	Changes
18.05.12	Robert Angermayr (Rob) robert@angermayr.net	2.21	Initialversion based on the Custom Functions description v1.91 from HeinrichsWeikamp
01.07.12	Robert Angermayr (Rob) robert@angermayr.net	2.21	Clarification of the documents license and formatting
10.08.12	Robert Angermayr (Rob) robert@angermayr.net	2.50	Value Change in CF65, CF01, CF09, CF16, CF17, CF29 Changes in Values: • CF01: 30cm > 75cm, 0,10..1m > 0,20...1m • CF09: 22% > 20% • CF16: 0..1m > 0..2m • CF29: 3..6m > 2..6m Changes in Descriptions: • CF08: Hint to CF66 • CF17: Unit change from mbar to bar. New Custom Functions: • CF64: Inactive gas color • CF65: Show safety-stop • CF66: Show gradient factor in NDL Change of the document title. Removing of all references to old OSTC.
04.12.12	Robert Angermayr (Rob) robert@angermayr.net	2.57	Value Change in CF33 Changes in Values: • CF33: 90% > 85% New Custom Functions: • CF67: Alternativ GF Low • CF68: Alternativ GF High • CF69: Allow switching between GF-pairs

Remark:
To simplify this revisions table, evolutions (beta versions) between 2 stable revisions are synthesized in the following stable revision and removed from the table.

CF00: Water depth for the automatic start of dive mode

This value sets the threshold for the OSTC to turn on and switch into the dive mode automatically. The current pressure is permanently compared with the air pressure measured 30min ago.

Example: CF00=150 - In 150cm depth the OSTC activates itself and switches into the dive mode.

Default value: 1.00m
Suggested range: 0.50m...2.50m

CF01: Water depth for the automatic end of dive mode

This value sets the threshold for the OSTC to end the current dive and switch into surface mode. After reaching the depth for at least CF02 seconds the OSTC stores the dive into the logbook and switches to surface mode.

Example: CF01=100 - Above 100cm depth and after the time set in CF02 the OSTC switches into surface mode.

Default value: 0.75m
Suggested range: 0.20m...1.00m

CF02: Delay for end of dive mode

This value sets the time the OSTC will wait before switching into surface mode after a dive. The time will be reset if the OSTC is below the threshold set in CF01.

Example: CF02=120 - After two minutes above the threshold set in CF01 the OSTC will switch to surface mode.

Default value: 240s
Suggested range: 120s...240s

CF03: Timeout for menus and surface mode

This value sets timeout (in seconds) for the OSTC to automatically close Menus and switch off the OSTC. This time is reset after any key press.

Example: CF03=120 - After two minutes without key press the OSTC will close menus and switch off.

Default value: 2:00min
Suggested range: 0:30min...4:00min

CF04: Hold time for pre-menu display

This value sets timeout (in seconds) for the pre-menu phase "Menu?".

Example: CF04=5 - After five seconds, "Menu?" is removed.

Default value: 0:05min
Suggested range: 0:01min...0:30min

CF05: Threshold for display of vertical velocity

This value sets the threshold of the vertical velocity. When reaching this value, the OSTC displays the velocity in the dive mode.

Example: CF05=10 - When the OSTC detects 10m/min or more vertical velocity the velocity is displayed in the dive mode.

Default value: 7m/min
Suggested range: 3m/min...18m/min

CF06: absolute pressure for switch-on from sleep mode

The value sets the absolute pressure where the OSTC activates itself when submerged. The displayed depth is compensated with the air pressure measured 30min ago.

Example: CF06=1200 - When reaching 1200mBar or approximately 2m depth, the OSTC turns on automatically.

Default value: 1160mbar
Suggested range: 1100mbar...1500mbar

CF07: max. "allowed" air pressure for air pressure compensation in sleep mode

The value sets the upper limit of the air pressure compensation routine. With this value, the OSTC limits false depth readings even if the OSTC is submerged extremely slow (<1m/30min). This value should be smaller then CF06.

Example: CF07=1080 - Unrealistic air pressures above 1080mBar are ignored.

Default value: 1080mbar
Suggested range: 1080mbar...1200mbar

CF08: Threshold for display of the gradient factor for decompression calculation

This value sets the threshold for the display of the gradient factor. When reaching this value, the OSTC displays the gradient factor during dive mode.
During NDL diving phases, the gradient factor is only displayed if CF66 is also activated.

Example: CF08=20 - When the gradient factor reaches 20 or more percent the value is displayed during the dive mode.

Default value: 20%
Suggested range: 1%...99%

CF09: threshold (O2-proportion) for display of current gas in dive mode

This value sets the threshold (O2-proportion in %) where the current gas is displayed during dive mode. Trimix-gases are ALWAYS displayed.

Example: CF09=22 - Gases with 22 or more percent O2 or any trimix-gas are displayed during dive mode. (All Gases but air are displayed)

Default value: 20%
Suggested range: 1%...22%

CF10: Timeout for menus in dive mode

This value sets the timeout (in seconds) for all menus in dive mode. After that time the menus are closed automatically. The time resets with any key press.

Example: CF10=45 - After 45 seconds, the underwater menus are closed automatically.

Default value: 0:45min
Suggested range: 0:05min...1:00min

CF11: Factor for saturation processes

With this value (factor in Percent) the saturation processes are shifted. A value above 100 (100%) means that more N2 and He saturation is calculated then assumed by Buehlmann.

Values below 100 (100%) mean that LESS saturation is calculated. This is only recommended when experimenting with the simulator but not for real-dive use!

Example: CF11=110 - A ten-percent excess charge is calculated.

This is critical Custom Function!
If the value is below 110 a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 110%
Suggested range: 110%...200%

CF12: Factor for desaturation processes

With this value (factor in percent) the desaturation processes are shifted. A value below 100 (100%) means that less N2 and He desaturation is calculated then assumed by Buehlmann. This results in a slower desaturation between the dives.

Values above 100 (100%) mean that more desaturation is calculated (faster desaturation). This is only recommended when experimenting with the simulator but not for real-dive use!

Example: CF12=90 - The desaturaion is slower then assumed by Buehlmann.

This is critical Custom Function!
If the value is above 90 a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 90%
Suggested range: 50%...90%

CF13: Ratio for do not fly time according to the desaturation time

This value sets the ratio (in percent) between the desaturation- and the do not fly time.

Because of the different air pressures during a flight we strongly recommended to wait at least 24h before flight after the last dive.

Example: CF13=60 - The do not fly time is 60% from the total desaturation time

Default value: 60%
Suggested range: 60%...100%

CF14: Threshold for optical gradient factor alarm

This value sets the threshold (in percent) for the gradient factor optical alarm.

Example: CF14=100 - When reaching a gradient factor of 100% an optical alarm is displayed.

Default value: 100%
Suggested range: 50%...100%

CF15: Threshold to display CNS in surface mode

This value sets the threshold (in percent) to display the CNS value in surface mode

Example: CF15=10 - When reaching 10% or more CNS load, the CNS value is displayed in surface mode.

Default value: 10%
Suggested range: 0%...100%

CF16: Estimated distance to decompression stop

This value sets the estimated distance to the current decompression in 10cm steps. Usually, the stop is done below the shown value. This value increases the forecast of the total decompression time.

Example: CF16=10 - The decompression stops are made 1m below the required depth

Default value: 1.0m
Suggested range: 0.0m...2.0m

CF17: Lower threshold for ppO2 warning

This value sets the lower threshold (in 0.01Bar ppO2 steps) when a warning is displayed.

Example: CF17=19 - When reaching 0.19Bar or less ppO2 a warning is displayed

⚠ This is critical Custom Function!
If the value is below 19 a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 0.19bar
Suggested range: 0.19bar...0.21bar

CF18: Upper threshold for ppO2 warning

This value sets the upper threshold (in 0.01Bar ppO2 steps) when a ppO2 warning is displayed.

Example: CF18=160 - When reaching 1.6Bar or more ppO2 a warning is displayed

⚠ This is critical Custom Function!
If the value is above 160 a warning symbol (Skull) is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 1.60bar
Suggested range: 0.00bar...1.60bar

CF19: Upper threshold for ppO2 display in dive mode

This value sets the upper threshold (in 0.01Bar ppO2 steps) when the current ppO2 level should be displayed in dive mode.

Example: CF19=140 - When reaching 1.4Bar or more ppO2 the value is displayed during dive mode.

⚠ This is critical Custom Function!
If the value is above 150 a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 1.40bar
Suggested range: 0.00bar...1.50bar

CF20: Depth sampling rate for Profile storage

This value sets the sampling rate of the profile storage within the OSTC.

Example: CF20=5 - Every five seconds, the depth is stored in the OSTCs profile memory.

Default value: 10s
Suggested range: 1s...120s

CF21: Temperature sampling divisor

This value sets how often the temperature (dependent on the sampling rate CF20) should be stored in the dive profile.

Example 1: CF20=10 CF21=2 - Every ten seconds, the depth is stored. The temperature is stored every 20 seconds additionally.

Example 2: CF20=1 CF21=60 - Every second, the depth is stored. The temperature is stored every minute additionally.

Example 3: CF21=0 - The temperature is not stored as all.

Default value: 6
Suggested range: 0...15

CF22: Decompression data sampling divisor

This value sets how often the decompression data (dependent on the sampling rate CF20) should be stored in the dive profile.

Example 1: CF20=10 CF22=2 - Every ten seconds, the depth is stored. The decompression data is stored every 20 seconds additionally.

Example 2: CF20=1 CF22=60 - Every second, the depth is stored. The decompression data is stored every minute additionally.

Example 3: CF22=0 - The decompression data is not stored as all.

Default value: 6
Suggested range: 0...15

CF23: Gradient Factor sampling divisor

This value sets how often the Gradient Factor data (dependent on the sampling rate CF20) should be stored in the dive profile.

Example 1: CF20=10 CF23=2 - Every ten seconds, the GF data is stored. The GF data is stored every 20 seconds additionally.

Example 2: CF20=1 CF23=60 - Every second, the depth is stored. The GF data is stored every minute additionally.

Example 3: CF23=0 - The decompression data is not stored as all.

Default value: 6
Suggested range: 0...15

CF24: PpO2 sampling divisor

This value sets how often the ppO2 data (dependent on the sampling rate CF20) should be stored in the dive profile.

Example 1: CF20=10 CF24=2 - Every ten seconds, the depth is stored. The ppO2 data is stored every 20 seconds additionally.

Example 2: CF20=1 CF24=60 - Every second, the depth is stored. The ppO2 data is stored every minute additionally.

Example 3: CF24=0 - The ppO2 data is not stored as all.

Default value: 0
Suggested range: 0...15

CF25: Divisor reserved for developers extra debug information

This value sets how often additional debug data (dependent on the sampling rate CF20) should be stored in the dive profile.

⚠ This is critical Custom Function!
Do NOT dive with a OSTC configured with another value than 0!

Default value: 0
Suggested range: 0...15

CF26: CNS sampling divisor

This value sets how often the CNS data (dependent on the sampling rate CF20) should be stored in the dive profile.

Example 1: CF20=10 CF26 = 2 - Every ten seconds, the depth is stored. The CNS data is stored every 20 seconds additionally.

Example 2: CF20=1 CF26=60 - Every second, the depth is stored. The CNS data is stored every minute additionally.

Example 3: CF26=0 - The CNS data is not stored as all.

Default value: 12
Suggested range: 0...15

CF27: Threshold for display of the CNS value

This value sets the threshold for the display of the CNS value.

Example: CF27=30 (30%) - When the CNS value reaches 30 or more percent the value is displayed during the dive mode.

Default value: 20%
Suggested range: 5%...75%

CF28: Logbook offset for the real dive number

With this offset the actual dive number is displayed in the Logbook detail view. If the value is not zero this CF will be increased automatically after every dive. It represents the dive number of the last dive in the OSTC logbook.

Example: CF28=914 - The newest dive in the logbook is called "#914", the second is "#913", etc.

Default value: 0
Suggested range: 0...32700

CF29: Depth of last decompression stop

With this value, the depth of the last decompression stop can be configured (e.g. 6m instead of 3m), the decompression calculations are adjusted automatically.

Example: CF29=6 - The last decompression stop will be in 6m, the decompression calculations are adjusted automatically.

⚠ This is critical Custom Function!
If the value is above 6 (6m) a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 3m
Suggested range: 2m...6m

CF30: Delay for end of apnoe mode

This value sets the time the OSTC will wait before ending the apnoe mode and switch into surface mode. The time will be reset if the OSTC is below the threshold set in CF01.

Example: CF30=5 - After five minutes above the threshold set in CF01 the OSTC will end the apnoe mode.

Default value: 0:10h
Suggested range: 0:01h...0:15h

CF31: Show battery symbol or battery voltage

This value defines if the battery symbol or the actual battery voltage level is displayed in surface mode.

Example: CF31=1 - In the surface mode the battery voltage is displayed

Default value: Show symbol

CF32: Gradient Factor low

The value sets the GF low setting (GF method extension (Erik Baker)).

Example: CF32=30 - GF low = 30% or 0.3.

⚠ This is critical Custom Function!
If the value is above 90 (90%) a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 30%
Suggested range: 5%...90%

CF33: Gradient Factor high

The value sets the GF high setting (GF method extension (Erik Baker)).

Example: CF33=85 - GF high = 85% or 0.85.

⚠ This is critical Custom Function!
If the value is above 95 (95%) a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 85%
Suggested range: 30%...95%

CF34: Battery color

This Custom Function sets the color for the battery symbol in Dive- and surface mode.

Default value: 199

CF35: Standard color

This Custom Function sets the standard color for outputs in dive- and surface mode.

Default value: 255

CF36: Divemask color

This Custom Function sets the standard color for the descriptions in dive mode.

Default value: 62

CF37: Warnings color

This Custom Function sets the standard color for the warnings in dive mode

Default value: 224

CF38: Show dive time with seconds

Setting this value to 1 will display the dive time in minutes:seconds for all dive modes.

Example: CF38=1 - The dive time will be displayed in minutes:seconds for all dive modes.

Default value: Min

CF39: Adjust fixed set point

If this CF is set to 1 and the CCR mode with fixed set point is active, the OSTC will check if the ppO2 of the diluent is higher then the set point. If this is true the set point will be adjusted (increased).

Default value: Do not adjust

CF40: Show ceiling warning

If this CF is set to 1 the decompression stop display will turn into the warning color if violated.

Default value: Warning color

CF41: Gas mix icons

With this setting the user can decide if the tank icon on the main screen is displayed or not.

Default value: Show icon

CF42: Show better gas

Setting this value to 1 will blink the current gas if a better gas is available and was configured for this dive.

Example: CF41=1 - The current gas will blink if a better gas is available for this depth.

Default value: Blinking

CF43: Depth warning

Depth reading is color coded when diving deeper then this value.

Example: CF43=7000 (60m) - When diving in more 60m the depth reading will be colored
            with Color# Warnings (Default: Red)

Default value: 13000mbar
Suggested range: 0mbar...13000mbar

CF44: CNS warning

CNS reading is color coded if CNS reading is bigger then this value.

Example: CF44=101% - If the CNS reading is bigger then 101%, the output will be
            colored with Color# Warnings (Default: Red)

Default value: 101%
Suggested range: 50%...101%

CF45: GF warning

GF output is color coded if GF reading is bigger then this value.

Example: CF45=101% - If the GF is bigger then 101%, the output will be
            colored with Color# Warnings (Default: Red)

Default value: 101%
Suggested range: 50%...101%

CF46: ppO2 warning

ppO2 output is color coded if the reading is bigger then this value.

Example: CF46=161 - If the ppO2 is bigger then 1.60Bar, the output will be
            colored with Color# Warnings (Default: Red).

Default value: 1.61bar
Suggested range: 1.00bar...1.61bar

CF47: Velocity warning

Descent/Ascend speed output is color coded if the reading is bigger then this value.

Example: CF47=15 - If the ascend or descent speed exceeds 15m/min the output will be
            colored with Color# Warnings (Default: Red).

Default value: 15m/min
Suggested range: 7m/min...20m/min

CF48: Time offset/day

This Custom Function will correct the internal clock. The Value represents a number of seconds that will
be added to the clock at midnight.

Default value: 0:00s
Suggested range: -2:00s...+2:00s

CF49: Show altimeter

Sets if the altimeter should be displayed on the surface screen.

Default value: Do not show altimeter

CF50: Show log-marker

Sets if the Bookmark option should be available in the underwater custom view menu (Toggle options
with ENTER button while no underwater menu is active).

Default value: Do not show

CF51: Show stopwatch

Sets if the Stopwatch with resettable average depth option should be available in the underwater
custom view menu (Toggle options with ENTER button while no underwater menu is active).

Default value: Show

CF52: Show tissue graph

Sets if the graphical tissue saturation should be available in the underwater custom view menu (Toggle
options with ENTER button while no underwater menu is active).

Default value: Do not show

CF53: Show leading tissue

Sets if the leading tissue info box should be available in the underwater custom view menu (Toggle
options with ENTER button while no underwater menu is active).

Default value: Do not show

CF54: Shallow stop first

Sets if the shallowest decompression stop (usually 3m) is shown at the top or the bottom of the decompression plan.

Default value: Deepest stop on top

CF55: Gas switch

Sets the time required for a planed gas switch. When changing gas in deeper depth, the time required for the change has effect on the decompression. To achieve a better forecast of the the total decompression time this can be taken into account. Changes with change time >0min will be shown in yellow in the deco plan.

Default value: 0min
Suggested range: 0min...10min

CF56: Bottom gas consumption

Gas usage in l/min or bar/min for the bottom gas. This is used to calculate the gas consumption in the runtime simulator.

Default value: 20l/min (bar/min)
Suggested range: 5l/min (bar/min)...50l/min (bar/min)

CF57: Ascent gas consumption

Gas usage in l/min for the ascend/deco gas. This is used to calculate the gas consumption in the runtime simulator.

Default value: 20l/min (bar/min)
Suggested range: 5l/min (bar/min)...50l/min (bar/min)

CF58: Future time to surface

Shows the TTS in xx min (custom view field "Future TTS") which will be valid if staying at the current depth the configured time.

Example: CF58=5min -> Future TTS is now the TTS (Ascend and decompression phase) which will be valid in 5min adding to the current dive time.

Default value: 0min
Suggested range: 0min...10min

CF59: Cave warning

Based on CF56, the gas consumption is monitored during the dive and a warning is displayed when this value (CF59) is exceeded. Useful for the "rule of thirds" during cave dives.

Default value: 0l

CF60: Graphic velocity

Shows a graphic representation of the ascent speed, if enabled.

Default value: Text only

CF61: Show pSCR ppO2

Shows the computed ppO2 of a pSCR in the custom view field "pSCR Info" . It's required to have CF62 and CF63 configured! ppO2= ((Depth / 10 + 1) x fO2) - (1 - fO2)*CF62*CF63.

Default value: Do not show

CF62: pSCR O2 Drop

O2 Drop in a pSCR Rebreather in percent.

Example CF62=4% -> The O2 drop is 4%.

Default value: 4%
Suggested range: 0%...100%

CF63: pSCR lung ratio

Counter lung ratio in a pSCR rebreather.

Example: CF63=10 Default setting: 10 -> The counter lung ratio is 1/10.

Default value: 10
Suggested range: 0...100

CF64: Color inactive gases

This Custom Function sets the standard color for inactive gases.

Default value: 74

CF65: Show safety stop

The safety stop is displayed from 5m up to 3m depth, the duration is 3 minutes.

Descending to a depth deeper than 10m resets the stop time and the 3 minutes countdown starts again when reaching the safety stop depth (from 5m to 3m).

If the dive has a real decompression stop, no safety stop will be shown.

Default value: Without safety stop

CF66: Show gradient factor in NDL

Force the display of the actual gradient factor in non deco limit dive phases.
The gradient factor is displayed only if it is greater than the gradient factor defined in CF08.

Default value: Do not show in NDL

CF67: Alternaitve Gradient Factor low   BETA

The value sets the GF low setting (GF method extension (Erik Baker)).
Switching to the Alternative GF-Set is possible when CF69 is activated.
You can only switch to a Gradient Factor set.
Either the pair CF32/CF33 or the pair CF67/CF68 is active.

Example: CF32=30 - GF low = 30% or 0.3.

⚠ This is critical Custom Function!
If the value is above 90 (90%) a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 30%
Suggested range: 5%...90%

CF68: Alternative Gradient Factor high   **BETA**

The value sets the GF high setting (GF method extension (Erik Baker)).
Switching to the Alternative GF-Set is possible when CF69 is activated.
You can only switch to a Gradient Factor pair.
Either the pair CF32/CF33 or the pair CF67/CF68 is active.

Example: CF33=90 - GF high = 90% or 0.9.

⚠ This is critical Custom Function!
If the value is above 95 (95%) a warning symbol is displayed permanently during Surface- and dive mode. Do NOT dive with a OSTC configured that way!

Default value: 90%
Suggested range: 30%...95%

CF69: Allow Gradient Factor change   **BETA**

With this Custom Function active, you can switch between the Gradientfactor pairs CF32/CF33 and CF67/CF68 and vice versa.

Default value: Off (do not allow GF change)
Suggested range: On...Off

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