TWIG Configuration Guide

Publication number: YZ3501-08-EN

For:

TCP90EU devices:

TWIG Protector
TWIG Protector Ex IIC
TWIG Protector Easy S and P
TWIG Asset Locator

Compatible with:

TWIG Configurator 3.22
TWIG FirmwareLoader

Due to functional differences between TWIG device models, versions and releases, all settings described in this document are not applicable to all devices.

Generally only those settings applicable to the specific device being configured are displayed for selection by the TWIG Configurator application.

TWIG over-the-air protocols are generally backwards compatible from TGP81EU to TCP90EU to TUP90EU to TUP91EU. For details please refer to TWIG Integrator Kit (TWIG MPTP Specification and TWIG GPRS Protocol Specification).

Twig Com Ltd has a general policy of backwards compatibility to protect customer system investments. Twig Com Ltd however reserves the right to change its products, specifications and documentation without prior notice.

All information, albeit believed to be correct, is provided "as is" without warranties. Correct settings are essential for functionality and performance of TWIG devices, and shall always be carefully considered and tested by customer administrator, at perjury of risk to persons or property or risk of financial losses. Twig Com Ltd expressly denies any direct or indirect or consequential liabilities due to device settings.

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1. Installing TWIG Configurator

Download the latest TWIG Configurator application setup file (TWIG_Configurator_setup.exe) from www.twigcom.com, and save it in your computer. The application installs by executing the .exe file.

Caution!
- **Use correct TWIG Configurator and TWIG FirmwareLoader versions, matching your TWIG device type. Device type (TUP91EU,TUP90EU, TCP90EU, TGP81EU) is printed in type label, on back side of device.**
- **Settings files saved from TWIG Configurator are NOT cross-compatible between device types TUP91EU, TUP90EU and TCP90EU.**

System requirements: Windows 10, Windows 8, Windows 7, Windows Vista or Windows XP. USB port, cable USB to mini-USB and charger adapter or programming Station.

Connect TWIG device to computer with cable USB to mini-USB (YC3004) attached to the charger adapter "clip" (AUG81) or programming station (AGP81). The operating system will notify you of finding a new device, and installs drivers automatically.

Installation process may vary depending on your operating system. Installation requires workstation administrator rights. After the installation is done, you may need to restart and reconnect the device.

You can change tool language from tool File menu.

2. Connecting Device with PC

Once the TWIG Configurator software application is installed, you can establish a connection between TWIG device and your computer.

Device must be turned on and connected to computer when using the TWIG Configurator.

Connect TWIG device to computer with cable USB to mini-USB (YC3004) attached to the charger adapter "clip" (AUG81) or programming station (AGP81).

Note!
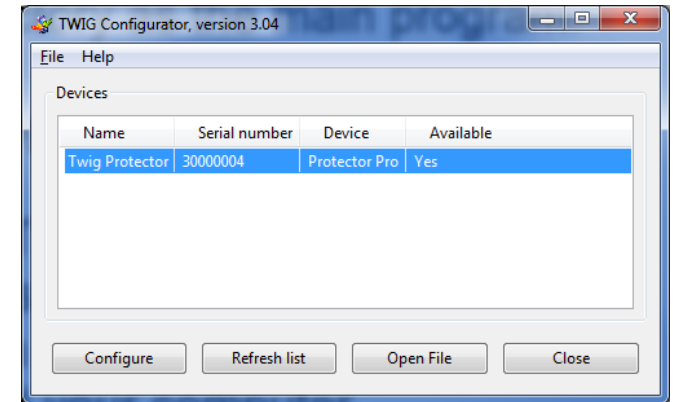- **TWIG charging station CTA81 does not support USB connection.**

Next run the TWIG Configurator application by double-clicking on the .exe –file on your computer.

Select the correct device to be configured from the list and press *Configure* –button. TWIG device connects automatically, as indicated by device information on right pane.

Press *Read from device* to get current settings from the device.

3. Device Information and Settings

The Device Info box displays details on your TWIG device, including the serial number, IMEI code as well as the device firmware versions and installed modules.

You can access various settings groups by clicking on the setting groups in the left window.

Note that TWIG device settings are case sensitive. If there are wrong characters or other invalid values entered in a data field, those are ignored and default value is used instead.

Depending on device hardware version, firmware version and configurations, all settings may not be available. Please contact TWIG Support if in doubt.

Note! If the device has already been configured remotely from a central station (for example TWIG WebFinder SP), care should be taken not to interfere with the remote settings when using TWIG Configurator.

Device Control

Reboot Device –button restarts the unit. Reboot is needed after uploading settings to device by **Write to device** –button. Use then **Read from device** – button to reload new saved settings from device back to TWIG Configurator application.

Factory Set –button restores factory default settings.

Set Password –button gives access to managing device settings password.

Device Name: Program device name.

Display Contrast: -slide changes device screen contrast. The value is unique to each unit and is pre-programmed in the factory.

Device Settings

Write to device –button saves the current settings from the TWIG Configurator application to device.

Note!
Use *Reboot Device* **after uploading settings by** *Write to device* **–button, to ensure all settings take effect.**

Read from device –button reads all the settings currently in the device to TWIG Configurator application. This overwrites all data field values in TWIG Configurator

4. Managing settings files

You can save device settings from TWIG Configurator to a PC file as well as read device settings files from PC to TWIG Configurator.

Caution!
Settings files saved from TWIG Configurator 3.17 are NOT cross-compatible between device types TUP91EU,TUP90EU and TCP90EU.

Read from file reads settings from a .twig –file to TWIG Configurator. This overwrites all data field values in TWIG Configurator.

Save to file writes the current settings values in TWIG Configurator to a .twig –file.

5. General Settings

PIN Code

Stores 4-digit PIN code for device SIM card. Default value for TCP90EU –device is 9999.

PIN Code can be managed either by entering here the correct code, or disabling the PIN code in the SIM card.

Disable PIN by placing the SIM card in a compatible mobile phone, and by turning off the PIN query.

If PIN code is defined incorrectly, the *SIM Failure Symbol* will be displayed when device is powered on. After three failed attempts, the SIM card will be blocked. If your SIM card gets blocked, you need a PUK code (8 digits) to open it. Remove the SIM card from the TWIG device and install it into a mobile phone compatible with your SIM card. When trying to open the phone, it will prompt you for the PUK code. After entering the PUK code, key in a new PIN code. You can then install the SIM card back to your TWIG device. If you fail to key in the correct PUK code 10 times in a row, your SIM card will be permanently blocked. If this happens, contact your network operator to get a new SIM card.

Generic application sound level

Defines the volume level that is used to play warning, notification and incoming call tones. Value can be set from 1 to 5, or if value 0 is used tones are not used at all. Default value is 3.

Sleep Mode (Power Saving Mode)

Sleep Mode controls how the device sleeps and wakes up. This can substantially affect battery operating time.

Note that if *Sleep Mode* selection is other than *Normal* then *GPS Motion Sensitivity* and *ManDown* functions are disabled.

Normal: Device does not enter "deep sleep" at all. Device uses timers (such as *GPS Max Search Time*, *GPS Sleep Time*, *GPRS Reconnect Interval*) to control operation and current consumption.

Medium (Sensor): Device wakes up after *GPRS Reconnect Interval* has elapsed, or whenever it moves (detected movement is greater than *GPS Motion Sensitivity* [mG]). As long as device is awake it is controlled normally by *GPS Max Search Time*, *GPS Sleep Time* and *GPRS*

Reconnect Interval. If tracking is activated, tracking update messages are sent only when device is moving and awake. Whenever movement stops (detected movement is below *GPS Motion Sensitivity* [mG]), device goes to sleep after 5 minutes.

Medium (Sensor) with LCD off: Same as Medium, but device display is off.

Heavy (Timer): Only applicable to TWIG Asset Locator. The device wakes up only to the Power ON key, or after GPRS Reconnect interval or active tracking interval has elapsed.

Service Center Number

Defines the SMS number where generic Mobile Originated MPTP messages such as low battery or docking & undocking notifications are sent. The same number is also authorised to transmit remote configuration via SMS.

If GPRS is used type "*GPRS*" (without "") instead of SMS number.

Generic Vibra mode

Defines whether vibrator is used on generic notifications. A separate setting exists for vibrator use in Emergency functions

Automatic Answer

Disabled: All incoming calls are allowed and they are shown to user as incoming call (default).

Enabled: All incoming calls are automatically answered.

Block All Incoming Calls: Incoming calls are not received and not shown to user.

Note!

   If white list is in use, its handling of calls or calls and SMS's will override this setting.

Incoming call reject/end

Defines if user can reject/end incoming call with END key .

Allowed:

Denied:

Status Messages

Define if the TWIG device transmits status messages to Service Center, informing of various events.

Low Battery –message is sent when device battery level declines to limit value, selectable between *20*, *40* or *60* percent of full battery charge. Default is OFF.

Note that battery levels can vary substantially when using the device, particularly with timer functions. This may cause false or repeating Low Battery alarms.

Docked –message is sent when TWIG device is placed in charging station CTA81 ("dock") and *Undocked* – message when device is picked up from charging station. Default for both is OFF.

Power On –message is sent when device is switched on, and *Power Off* –message when user turns off the device or it turns itself off due to low battery. Default for both is OFF.

Note that if docking/undocking or power on/power off events happen within 1 minute, the latter status message may be lost.

ManDown On/Off –message is sent if user toggles ManDown function on or off. User authorisation to switch *ManDown* function on or off can be set in *ManDown* settings.

Charging Station Actions

Turn Off when Placed To Charging station = ON
Device turned OFF when device placed on charging station .

Turn On When Removed From Charging station=ON
Device turned ON when device removed from charging station

6. GSM

Lost GSM Beep tone interval

Enable BEEP tones, sounded in case there is no mobile network signal, or registering to mobile network fails. Default is OFF.

Tone Interval: Time interval between BEEPs [seconds].

7. GPS/GNSS

Max GPS/GNSS Search Time

Defines for how long GPS is trying to get a refreshed position after receiving a position request. If the refreshed position is not acquired within that time, device sends position update using the previously stored last known position. Valid values for *GPS Search Time* are between 2...10 minutes. Default value is 5 minutes. If the value is low, unit may not get position at all in poor satellite conditions. If the time is set long and unit is in poor satellite conditions it may unnecessarily increase power consumption and thus decrease operating time.

Sleep time

Defines how frequently GPS is updating position while not controlled by other processes like tracking. Time interval can be set between 0...18 h :12 min : 25 sec. Default value is 3 min 20 seconds. 0 means that GPS is permanently turned ON.

Motion Sensitive

Defines if the GPS is controlled by motion sensor. If = ON, GPS is turned off to save battery whenever detected movement is lower than the defined [mG] value in Motion Sensitivity item. Note that if this option is selected ON, you cannot use Man Down alert functions

Motion Sensitivity

Defines how much device must move to trigger GPS ON.

TWIG AGPS

Benefits of using AGPS

It is generally recommended to use AGPS (Assisted GPS) to improve GPS position availability and thus maximise chance of having current device position e.g. in case of user emergency.

GPS system typically offers no position availability indoors, and degraded position availability when moving from indoors to outdoors ("first fix"). AGPS may speed up first fix and improve position availability.

Note!

In order to use *TWIG AGPS:*
- *GPRS Mode* must be ON.
- Mobile subscription must have GPRS/IP service on.
- Mobile operator *GPRS setting* must be correct. Typically it is enough to set *APN* = "internet".

AGPS Mode

OFF: No AGPS is activated.

ON: **Recommended for all compatible device models.** Typical monthly GPRS/IP data usage: 3 MB.

Cost of using AGPS

There is no fee for using the TWIG AGPS.

Caution!

Each mobile operator charges for GPRS/IP data transfer according to their current rates and policies. Beware of data cost especially when roaming.

8. TWIG SOS Settings

SOS Cycle

SOS cycle is a series of emergency calls and messages triggered by pressing the SOS key or automated via e.g. ManDown alarm

SOS Key Activation Mode

Selects how the SOS key is used to activate the SOS cycle:

Disabled: The SOS key cannot be used.

Long Press

Two Presses

Post Emergency Mode

Enables the *Post Emergency Mode.*

During *Post Emergency Mode,* for example, GPRS/IP connection is kept on, incoming calls are blocked, and *Post Emergency Beep* is sounded to help locating the user.

Note!

In TCP90EU devices, user cannot activate another alarm until he ends *Post Alarm Mode* with RED END key.

Alarm Call Continue

Forces the emergency cycle to process all calls even if the preceding call is successful. All calls must be successfully made before stopping the emergency cycle. Default is OFF.

Power-Off key Disabled

Blocks the user from turning off the unit with power key. Default is OFF.

SOS ACK

Enable: If enabled, *SOS ACK* acknowledgement MPTP message is expected from ARC within *SOS ACK Response Time.*

SOS ACK Response Time (Value): Defines for how long the device will wait for MPTP *acknowledgement* message from the EMG message recipient, before proceeding to next number in the *SOS Events* list.

Emergency Number Text

Defines the text for prompting user to call network emergency number, for example when no SIM card is inserted or no roaming network is available. Default text is "112".

Note!

Emergency Number Text is only displayed to user, and does not affect dialling. Call will be made to public emergency service. No position is sent.

Event Start Delay

Defines a delay used between events in SOS cycle. Depending on the network, this delay may need to be substantial since network may reject calls made in fast sequence. If there are only SMS numbers in the SOS cycle the delay can typically be shorter.

Full SOS Cycles

Defines the number of full TWIG SOS event cycles to be done. Range is 1 – 5. Default is 1.

Call Timeout

Defines the timeout to skip to next event on SOS list if no answer from B-subscriber.

Post Emergency Beep

Defines the time interval between "locate me" –beeps. Range is 0 - 250 seconds. Default is 0 which means the beep is disabled.

SOS Vibrator Enabled

Defines if device will shortly vibrate at the exact moment when Pre-Alarm ends and TWIG SOS starts, following user pressing device SOS key, or TWIG Button, or ManDown triggering alarm. Default is ON.

Note that *SOS Vibrator Enabled* only applies to this special case. Generally vibrator is controlled in *General Settings*

Display

Defines if TWIG SOS is sent without showing actions on device screen. If disabled, only a small icon on the info line on top of screen indicates ongoing alarm. This allows discrete or hidden TWIG SOS. Default is ON.

END Key Timeout

Defines if TWIG SOS can be ended once started. 0 means it can only be ended from remote center by hanging up the call. Default is 1 second.

Activation Method Timeout

Defines the period how long SOS key need to be pressed before alarm cycle started.

 (1…5 seconds Protector, Embody and Protector Easy 2…5seconds)

Cancellation Period

Defines the period (0..20 seconds) when the SOS cycle can still be cancelled if activated from SOS key. Default is 0 which disables the cancellation possibility.

GPS/GNSS On Time

Defines how long the GPS will be kept on in full power after the started SOS cycle.

SOS Texts

Define the text string in EMG message identifying each possible alarm trigger type:

SOS key: Alarm triggered by device alarm button. Default value is "SOS KEY".

ManDown: Alarm triggered by ManDown function. Default value is "MANDOWN ALARM".

TWIG Button: Alarm triggered by TWIG Button wireless RF remote SOS button. Default value is "REMOTE".

Amber Alert: Alarm triggered by Amber alert (timer alert, condition check). Default value is "CONDITION CHECK".

Ripcord : Alarm triggered by Ripcord. Default value is "RIPCORD ALERT".

Maximum length of text string is 1 characters (TCP90EU 15 characters). Only characters 0-9, A-Z and a-z are valid. No special characters are allowed.

SOS Events

TWIG SOS initiates an alarm sequence, controlled by a list of up to 10 configurable *SOS Events*.

SOS Event Type

Call: Phone call is made to *Phone Number*.

SMS MPTP: *SMS* message is sent to *Phone Number*, in MPTP format. SMS messages sent before calls. Position is based on GPS/GNSS.

SMS MPTP (GPRS/IP): *When Phone Number* is "GPRS" (without ""), alarm MPTP message is sent over GPRS/IP to *IP Server* Position is based on GPS/GNSS

Alarm MPTP message is sent over GPRS before making *Call*. This does not delay the call more than a few seconds. If GPRS connection is not possible, call only will be made.

Because SMS transmission is in many circumstances more reliable than GPRS, it is recommendable to always define at least *SOS Events* using SMS messages.

SOS Event Values

Phone Number: Defines SMS/Call number, or "*GPRS*" (without "").

Event Retries defines how many times a failed *SOS Event* is retried before moving to next one.

When *SOS ACK* is enabled, an MPTP ACK to a SOS message must be received from that Central Station within *SOS ACK Response Time*, or this *SOS Event* will fail.

Event Group: Order number of *SOS Event Group*, for implementing parallel alarm sequence branches. For linear alarm sequence, define value 1 (default) for all *SOS Events*.

Name is only for reference and not shown on screen.

Linear Alarm Sequence

SOS Events are executed one after other, in their numeric order (1 to 10). All SMS messages are sent first before the first call (if any) is being made. If several calls are defined, the calling chain is continued according to *Alarm Call Continue*.

Branched Alarm Sequence

SOS Events are branched into parallel *SOS Event Groups*, executed in their numeric order (1 to 9). Within each *SOS Event Group*, the *SOS Events* are executed in their numeric order (1 to 10).

If all *SOS Events* in any *SOS Event Group* are successfully completed, the whole alarm sequence is considered successful and ended.

If an *SOS Event Group* fails, the alarm cycle proceeds to the next *SOS Event Group*.

Alarm Call Continue

As soon as a call in the *SOS Events* –list is answered, the cycle will stop making further calls, if *Alarm Call Continue* is OFF (default).

An answering machine will also stop making further calls, despite no person has yet been reached. If *Alarm Call Continue* is ON, all calls in the SOS Events –list will be made, whether the prior calls are answered or not. All calls are also made, whether they belong to parallel *SOS Event Groups* or not.

TWIG Self-Test (DIN0825) Settings

Enabled: On device power-up, initiates Self-Test for device SOS key, ManDown function, TWIG Button and TWIG Beacon, and sends Self-Test report to Central Station.

Wait ACK controls Self-Test procedure:

ON: Device will not proceed from Self-Test to normal operation mode, until it receives Self-Test acknowledgement from Central Station.

OFF: Device will proceed from Self-Test to normal operation mode as soon as it has successfully completed Self-Test and sent Self-Test report to Central Station.

Power Off When Docked

Defines if unit is sending a request to power off when set to desk charging station CTA81 ("dock"). Power Off –command is sent from Central Station.

9. Assistance Numbers

Here you define the action when the numeric keys on the TWIG Protector are pressed. If you program only one number per button the action is either call or MPTP assistance (!ASS) SMS depending on which is configured.

If both numbers are defined both actions are done.

In TWIG Protector Easy and TWIG Embody only first pair of numbers is used to trigger call/SMS with the Green SEND key.

In devices where there is no function e.g. TWIG Asset Locator the fields have no value.

Programming "GPRS" (without "") as the SMS number the !ASS message will be sent over GPRS telematics.

Note that if a key is used for some other control, e.g. to toggle ON/OFF ManDown or Amber alert, assistance call function is disabled.

10. White List

White List controls authorization of incoming SMS and/or voice call to perform automatic actions.

If *White List Mode* is enabled, all authorised numbers must be listed, otherwise messages and calls will be rejected.

White List Mode

Disabled: White List is not used for authorising numbers.

SMS: All incoming MPTP SMS messages are screened.

Call: All incoming calls are screened.

SMS+Call: All incoming MPTP SMS messages and calls are screened.

White List Items (1…16)

Phone: SMS or phone number to be authorised.

LOC: Authorise location request SMSs from this number.

TRG: Authorise tracking request SMSs from this number.

CALL

Voice calls from each White List number can be individually screened:

Blocked: Calls from this number are blocked.

Allowed: Calls from this number are allowed to ring.

Auto Answer: Calls from this number are automatically answered.

HF Auto Answer: Calls from this number are automatically answered in hands-free (Speaker Phone) mode.

Note that Speaker Phone –mode is very loud and its use must be carefully considered.

Note!
> *Automatic Answer –*setting in *General Settings* **is overridden by** *White List* **when** *Call* **or** *SMS+Call* **is selected. A mix of allowed and blocked numbers can be defined, but if list has only blocked calls it blocks all calls.**

GPRS messaging is not controlled by *White List* but by *GPRS* and *Servers* –settings.

Regardless of *White List* settings the device can be reset to factory defaults by specific over-the-air commands (SMS or GPRS) when device details are known.

11. GPRS Settings

GPRS settings can be programmed remotely from the central station over MPTP SMS messages (as TWIG WebFinder SP does), or they can be programmed locally.

When GPRS settings have been programmed remotely, care must be taken not to interfere with remote settings when using TWIG Configurator.

This section only defines mobile operator's GPRS connection settings. *Servers* –section defines IP servers' settings.

GPRS Mode

Defines if GPRS is used or not. Default is OFF.

Note that also *User ID* must be defined in *Servers* in order to use GPRS telematics.

APN

Mobile operator's Access Point Name for GPRS communication. Define the entire APN value in the field.

Typically GSM operators allow the APN to be left empty or replaced with "internet". You can get the correct APN from your mobile operator.

GPRS User Name

If your mobile operator requires a user name for GPRS login, define the name here.

GPRS Password

If your mobile operator requires a password for GPRS log-in, define the word here.

GPRS DNS 1-2

Some GPRS networks require that primary domain name server (DNS1) is specified. Define the DNS as an IP address. Maximum length for DNS1 name is 16 characters.

In most cases this should be left blank

GPRS International Roaming Blocking

If set, GPRS connection is disabled when roaming outside home network. If not set, GPRS connection is available also during international roaming.

Default is OFF. The value is checked every time when creating GPRS connection.

Caution!
> **Allowing GPRS data roaming may result in very high data costs charged by your mobile operator.**

Note!
> **Device may roam also in your own country, close to country boarders.**

12. IP Servers

ID

ID is a number or text string used for uniquely identifying the device by the Central Station GPRS server. Typically this is the phone number of the TWIG device. ID is not needed if GPRS is only used for AGPS.

Service Number (Backup SMS Number)

Phone number where MPTP messages are sent as SMS, in case GPRS Mode is enabled but GPRS connection is not available.

If *Service Number* –field is empty, then the SMS backup function is disabled (default).

Some limitations may apply. For example, real-time tracking (TRR) is not possible via SMS.

Caution!
> **Activating *Service Number* may result in high SMS transmission costs.**

GPRS Connection Mode

Defines how the GPRS connection to server is kept active:

Only Reconnect: The *Reconnect* –mode is used at all times. Device makes GPRS connection to server at *Reconnect Intervals*, and receives any pending messages from server. Messages from device to server are transmitted without delay.

Always On: GPRS connection is always on. All messages between server and device are transmitted without delay.

When In Charger: GPRS connection is *Always On* when connected to charger, else *Reconnect* – mode is used.

Note that if you define *Always On* it may prevent device from sleeping or using timer functions, increasing the power consumption significantly and thus reducing battery life.

Reconnect Interval

Controls the sending interval of MO GPRS reconnect messages in *Reconnect* –mode. The device sends reconnect messages to server to check for server status and for any pending incoming messages. Default value is 5 minutes.

You can decrease *Reconnect Interval* value to improve MT messages latency, at the cost of increased overhead traffic.

If *Reconnect Interval* is set to **0** (zero), device makes GPRS connection only at power-up, or at sending a MO message such as EMG or tracking. Also MT messages are transferred, however MT latency is undefined unless tracking is activated.

Reconnect Interval value is also used by *Sleep Mode,* in *General Settings*.

MPTP

Header Translation

Defines whether special characters (? and !) in the beginning of MPTP messages (both SMS as well GPRS) are replaced by letters or not. Replacement is necessary in some mobile phone networks when using SMS where operator uses these characters for their own purposes.

Translate header:	OFF	ON
Requests:	?	Q
Updates:	!	E

Default value is OFF.

Note that the *Header Translation* setting needs to be configured identically in the central station, whether it is a server system or a TWIG Discovery.

Use Google Format

Enables a mode where all outgoing position messages are sent as Google Maps hyperlink. Data fields from the end of MPTP message are in brackets in the end of hyperlink.

Internal MPTP Commands

Allow programming macros that are executed in the device in the same way as MPTP commands sent from central station via SMS or IP/GPRS, such as tracking or position request.

Internal MPTP Commands can be run automatically on every start up, or when unit shifts from Emergency to Post Emergency mode.

Mode defines the execution condition:

   OFF: This *Internal MPTP Command* is disabled.

   Startup: This Internal *MPTP Command* is run automatically on every device power-up.

   Post Emergency: This *Internal MPTP Command* is run automatically every time the device changes from *Emergency mode* to *Post Emergency mode*.

Phone number is the recipient of SMS based MPTP message.

Command is the actual MPTP command to be executed. Refer to TWIG Integrator Kit (*TWIG MPTP Specification*) for details.

As an example, automatic tracking can be started when Emergency cycle is passed. The use of this mode requires that *Post Emergency Mode* is set ON in *SOS Settings*.

13. ManDown Alarm

ManDown alarm is a sensor-based aid to triggering SOS cycle also when the user is incapacitated and can no longer raise alarm by pressing SOS key.

In order to minimise false alarms or missing alarms, the ManDown alarm settings need to be carefully matched with the usage scenario and environment. The user needs to be trained on ManDown function and also on understanding its limitations.

Sensor Mode

OFF: ManDown is always off.

ON: ManDown is always on when Protector is turned on.

Enabled ON: ManDown is turned on when Protector is turned on, but user can toggle mode off/on with key 4.

Enabled OFF: ManDown is not turned on when Protector is turned on, but user can toggle mode on/off with key 4.

Note that if *GPS Motion Sensitivity* is enabled, ManDown alarm cannot be used and settings are greyed out.

Normal Status Delay

Defines for how long the device needs to be back in the normal orientation/movement before normal status is restored. *Normal Status Delay* is useful to prevent

cancelling TWIG SOS by accident. Range is 1 - 5 seconds. Default value is 1 second.

Alerts When

Set the ManDown criteria, for triggering TWIG SOS (default is *Horizontal*):

Horizontal: TWIG SOS is launched when device main axis orientation deviates from absolute upright position by more than *Tilt Angle* (in degrees). Device movement has no effect.

Vertical: TWIG SOS is launched when device beam axis orientation deviates from absolute upright position more than *Tilt Angle* (in degrees). Device movement has no effect. Typical application is wearing the device on the belt, in a horizontal carrying case.

See *Appendix A: ManDown Angles Illustrated*, for visualisation of device orientations for alert and no alert.

No Movement: TWIG SOS is launched when detected device movement (acceleration) falls below a threshold value defined by *Motion Sensitivity*. Device orientation has no effect.

Horizontal + Motion Sensitivity Enabled: TWIG SOS is launched when device main axis orientation deviates from absolute upright position more than *Tilt* Angle (in degrees), AND detected device movement (acceleration) falls below a threshold value defined by *Motion Sensitivity*.

Vertical + Motion Sensitivity Enabled: TWIG SOS is launched when device beam axis orientation deviates from absolute upright position more than *Tilt Angle* (in degrees), AND detected device movement (acceleration) falls below a threshold value defined by *Motion Sensitivity*.

Motion Sensitivity:

Enable: Adds movement criteria to orientation criteria, see *Alerts When* above.

Value: The threshold amount of detected device movement (acceleration), used to indicate either motion activity or motion inactivity. Range is 20… 999 mG. Default value is 100 mG. (1G = 9,8 m/s^2).

No Alarm Duration:

When ManDown sensor detects alarm-triggering condition (*Vertical* / *Horizontal* / *No Movement*), this setting defines a waiting time during which the sensor is waiting for the normal status to be restored, before actually triggering the Pre-Alarm and finally alarm. This is useful to prevent unnecessary alarms for example in cases where the user has fallen down or sits down but is otherwise fine. Range is 1 sec…18h:12 min:14 sec. Default value is 30 seconds.

Pre-alarm Duration:

Once ManDown sensor has detected an alarm-triggering condition and *No Alarm Duration* has passed, device enters Pre-Alarm period. During Pre-alarm the user is alerted by sound and vibration (according to sound and vibration settings in *Generic Settings* / *Environments*). When Pre-alarm period is over, and normal orientation/movement has not been restored, TWIG SOS is launched. Range is 1sec… 18 h:12 min:14 sec. Default value is 30 seconds.

Tilt Angle (ManDown Angle)

Defines the tilt angle (in degrees) the device must tilt, before its orientation is deemed to change from *Vertical* to *Horizontal*. Default value is 45 degrees.

14. Amber Alert (Condition Check, Timer Alarm)

Amber alert is an effective timer-based aid to triggering TWIG SOS when facing high-risk "code yellow" scenarios, also when the user is incapacitated and can no longer raise alarm by pressing SOS key.

Interactive Amber alert can also aid triggering alarm at Alarms Receiving Centre (ARC), in scenarios where loss of mobile network coverage is anticipated and transfer of SOS from TWIG device to ARC is thus compromised.

Interactive Amber alert, when chosen, requires careful integration with the ARC system, in order to effectively manage lone worker risks.

Amber Alert Mode

OFF: Amber alert is disabled, and cannot be be activated by the user (default).

INTERACTIVE: Main alarm timer, upon expiration of which "code yellow" turns to "code red", is to be implemented by the ARC system. The benefit of this architecture is that alarm will be raised at ARC also in case the TWIG device loses mobile network coverage after setting Amber alert.

There is a local timer on TWIG device, set at the same time with the ARC timer and with the same expiry duration, informing user through Pre-alarm when it is time to reactivate or turn off Amber alert.

Following the Amber alert activation by user, activation request is sent to ARC *Activation Phone Number*, either as MPTP SMS or GPRS message, or as voice call. Amber alert is only started when device receives an activation confirmation (ACK) from ARC *Activation Phone Number*, after which an activation indication (IND) is sent to ARC.

Amber alert is reactivated the same way as it is started the first time.

Following Amber alert deactivation by user, deactivation request is sent to ARC *Deactivation Phone Number*, either as MPTP SMS or GPRS message, or as voice call. Amber alert is only stopped when device receives a deactivation confirmation (ACK) from ARC *Deactivation Phone Number*, after which a deactivation indication (IND) is sent to ARC.

LOCAL: Alarm timer, upon expiration of which "code yellow" turns to "code red", runs in the TWIG device. The same timer informs user through Pre-Alarm when it is time to reactivate or turn off Amber alert.

Following the Amber alert activation by user, activation indication is sent to ARC *Activation Phone Number*, either as MPTP SMS or GPRS message, or as voice call.

Amber alert is reactivated the same way as it is started the first time.

Following Amber alert deactivation by user, deactivation indication is sent to ARC *Deactivation Phone Number*, either as MPTP SMS or GPRS message, or as voice call.

Amber alert is started/stopped, whether device receives an activation/deactivation confirmation (ACK) from ARC or not.

ACK Needed

This settings is not used.

Phone Number Type

Defines if SMS, GPRS or voice call is used for Amber alert activation/deactivation request, and for activation/deactivation confirmation (ACK), and for activation/deactivation indication (IND).

CALL: Device makes phone call to *Activation Phone Number* or *Deactivation Phone Number*, to request

(*Interactive Mode*) or Indicate (*Local Mode*) Amber alert activation or deactivation.

During phone call, user can select Amber alert timer duration by pressing device button for 2 seconds: 1=30 min, 2=1h, 3=1h30min, 4=2h. Selection is transmitted to ARC as DTMF.

Activation/deactivation confirmation (ACK) and activation/deactivation indication (IND) are transferred over SMS or GPRS.

SMS: Device sends a MPTP SMS message to *Activation Phone Number* or *Deactivation Phone Number*, to request (*Interactive Mode*) or Indicate (*Local Mode*) Amber alert activation or deactivation. The activation request/indication message includes Amber alert timer duration value.

Activation/deactivation confirmation (ACK) and activation/deactivation indication (IND) are transferred over SMS.

SMS (GPRS): When *Activation/Deactivation Phone Number* is "GPRS" (without ""), device sends a MPTP GPRS message to *IP Server Default*, to request (*Interactive Mode*) or Indicate (*Local Mode*) Amber alert activation / deactivation. The activation request/indication message includes Amber alert timer duration value.

Activation/deactivation confirmation (ACK) and activation/deactivation indication (IND) are transferred over GPRS.

Activation Phone Number

Defines the phone number where the Amber alert activation SMS/Call is sent/made. If value is "GPRS" (without "") then GPRS messages is sent to *IP Server Default*.

Deactivation Phone Number

Defines the phone number where the Amber alert deactivation SMS/Call is sent/made. If value is "GPRS" (without "") then GPRS messages is sent to *IP Server Default*.

If value is left empty, Activation Phone Number is used as default.

Pre-alarm time

Defines how much before expiry of the Amber alert timer Pre-Alarm is started.

During the Pre-Alarm, user can either reset or turn off Amber alert. If the mode is *Interactive*, device must receive (re)activation / deactivation confirmation (ACK) from ARC *Deactivation Phone Number* before timer expires.

Time

Defines the time in minutes from which the timer countdown starts.

15. Short Range Devices (SRD)

TWIG device settings for operating with Short Range Devices (SRD) are discussed in this section.

SRD peripherals communicate with a SRD transceiver in the TWIG device, over a two-way 869 MHz ISM – band RF link.

Note!

There is a SRD RF transceiver unit only in those TWIG devices ordered with the SRD option.

TWIG device can operate with TWIG Button wireless alarms, TWIG Beacon locating devices and TWIG Tag identifiers at the same time.

Note!

The SRD transceiver when activated increases TWIG device power consumption and thus decreases battery life.

The SRD transceiver is completely powered off when no TWIG Button wireless alarms are paired with the device, and *TWIG Beacon Location Enabled* is OFF, and *TWIG Tag Enable* is OFF.

TWIG Button wireless alarm

TWIG Button provides a flexible solution to adding remote wireless wearable alarm triggers to the TWIG device.

Maximum of 5 TWIG Button wireless alarms can be paired with one TWIG device.

Pairing and deleting TWIG Button wireless alarms

ID: Defines serial number of the TWIG Button to be paired with the TWIG device.

Get ID: Click on the *Get ID* –button to activate learning mode. Then press the TWIG Button. Indicator on TWIG Button unit will first light red and then turn green once paired.

To delete a TWIG Button, clear the corresponding *Unit ID* and then click on **Write to Device**.

SOS cycle by TWIG Button

When SOS cycle is initiated by TWIG Button, the EMG message includes text field *SOS Texts / TWIG Button* (default value is "SOS KEY"), followed by TWIG Button *Unit* number (1 – 5).

TWIG Beacon locating device

TWIG Beacon locating devices complement (A)GPS by providing a robust indoor location solution for environments such as factories, warehouses and institutions. Investment and location accuracy are scalable to suit case requirements.

TWIG Beacon Location Enabled

ON: SRD transceiver is powered on, to listen to TWIG Beacon signals.

OFF: SRD transceiver is not activated to listen to TWIG Beacon signals, however it may be activated to communicate with other types of TWIG SRD peripherals.

Low Battery Warning Forwarding

Defines if the low battery information received from TWIG Beacon is sent from TWIG device to Central Station.

ON: Low-battery warning message is sent when device registers new TWIG Beacon with low battery status. Low battery message is sent only once. When the device receives from same Beacon low battery cleared –message, the low battery status of that TWIG Beacon is reset.

OFF: Device forwards no low battery warnings from TWIG Beacon locating devices to Central Station.

TWIG Beacon Search Time

Defines the maximum time the Beacon signals are monitored. Range is 0…4 min :14 sec. Default is 5 sec.

TWIG Beacon SRD Sleep Duration

Defines SRD transceiver sleep time for TWIG Beacon reception. If the value is set to 0, the SRD transceiver is listening to TWIG Beacon SRD transceivers continuously. Note that it effects the power consumption. Range is 0…4 min :14 sec. Default is 10 sec.

TWIG Tag RF identifier

TWIG Tag RF identifiers are a cost-effective solution for attendance monitoring, check-in / check-out points, logistics management and many other reporting applications.

When TWIG Tag is swiped with compatible TWIG device, a *!INF* report message is sent to Central Station, with status code 019, text "*RFTag*", TWIG Tag 8-digit serial ID, and time stamp.

TWIG Tag Enable

Activates the TWIG device to listen to messages sent by TWIG Tag RF identifiers.

ON: SRD transceiver is powered on, to listen to TWIG Tag signals.

OFF: SRD transceiver is not activated to listen to TWIG Tag signals, however it may be activated to communicate with other types of TWIG SRD peripherals.

16. TWIG FirmwareLoader

TWIG device software ("firmware") is developed in-house, for best quality assurance, product innovation and customer support.

If you want to update installed base TWIG devices to latest firmware release, this can be effectively done at site by connecting the devices to a PC with TWIG FirmwareLoader application.

Installing TWIG FirmwareLoader

TWIG FirmwareLoader is compatible with all type TUP91EU,TUP90EU and TCP90EU device models, making firmware update easy and reducing risk from user error.

Download the latest TWIG FirmwareLoader application (.exe) from www.twigcom.com (/Software), and save it in your computer. The application is ready to be used without separate installation.

Device type TCP90EU uses Windows HID interface, so separate USB driver is not needed. When a TWIG device is for the first time connected to your computer,

the operating system will notify you of finding new device and typically install drivers automatically.

Caution!

Use correct TWIG Configurator and TWIG FirmwareLoader versions, matching your TWIG device type. Device type (TCP90EU) is printed on type label attached on back side of the device.

System requirements: Windows 8, Windows 7, Windows Vista or Windows XP. USB port, TWIG cable USB -to mini-USB and charger adapter or programming Station.

Updating Device Firmware

Connect TWIG device to your computer using cable USB to mini-USB (YC3004) attached to the charging adapter "clip" (AUG81) or programming station (AGP81).

Note!

TWIG Charging station CTA81 does not support USB connection.

Power the device on.

Run the TWIG FirmwareLoader application by double-clicking on the .exe –file on your computer.

When application lists the device name, click on *Select*.

In the new application window, click on **Begin Update.** Version number of the new firmware is shown at top of window (e.g. CT3P.01.010.0000).

Backing Up Device Settings

TWIG FirmwareLoader preserves device settings during firmware update.

It is recommendable practice to back up known-good device settings for later reference before firmware update, using *TWIG Configurator* and **Save to File** – function.

After updating firmware and rebooting, if *TWIG Configurator* requests password and you have lost it, perform device **Factory Reset**. Then **Reboot**, and return device settings from backup file using **Read from File**.

Firmware Versions

In firmware version number, the first 4 characters define device type. Second and third set of numbers are version number. The last set is custom version identifier.

TCP90EU:
CT1P = TWIG Protector, TWIG Protector Ex
CT1E = TWIG Protector Easy
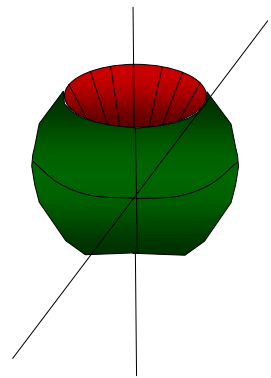CT1A = TWIG Asset Locator
CT1D = TWIG Dog Locator

A device cannot normally be programmed with firmware type different from the one already in the device. If you have a need to do so for example for testing please contact Twig Com Support at support@twigcom.com or +358 40 510 5058.
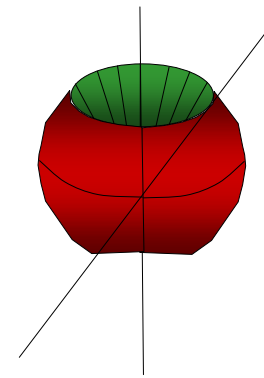
Appendix A:
ManDown Angles Illustrated

Alerts when vertical

Tilt angle e.g 45°
Allowed orientation in green.
Both on top and bottom. If tilted
more than 135 degrees, again in
allowed orientation. Alarm when
in RED area
NOTE, that also movement
condition must be met

Alert

No alert

Alerts when horizontal

Tilt angle e.g 45°
Allowed orientation in green.
Both on top and bottom. If tilted
more than 135 degrees, again in
allowed orientation. Alarm when
in RED area
NOTE, that also movement
condition must be met

No alert

Alert

Appendix B: Glossary

2G	GSM+GPRS mobile network
3G	WCDMA mobile network
ACK	Acknowledgement
APN	Access Point Name, for GPRS/IP connectivity
ARC	Alarms Receiving Centre
ASS	MPTP assistance call or message
Central Station	Central system monitoring alarm devices
DIN0825	Deutsche Industrie Norm for lone worker systems
DNS	Domain Name Server, for IP connectivity
Dock	Desk charging station, with remote indication of the device being "docked"
DTMF	Dual Tone Multiple Frequency, technique to transfer data over audio connection
EMG	MPTP emergency call or message
Emergency mode	Device state during which emergency communications with Central Station are prioritised
Firmware	Device executable software
GPRS	General Packet Radio System, a 2G (or "2.5G") mobile packet switched data system
GPS	Global Positioning System
GNSS	Global Navigation Satellite System
GSM	Groupe Special Mobile, the European 2-4G mobile communications evolution
IMEI	International Mobile Station Equipment Identity, unique GSM mobile device ID
INF	MPTP information message (status message, indication message)
IP	Internet Protocol
Mini-USB	Power and data connector standard used in TWIG charging adapters
MO	Mobile Originated, connection started by mobile device
MPTP	Mobile Phone Telematics Protocol, TWIG over-the-air protocol originally released in year 2000
MT	Mobile Terminated, connection started by server to mobile device
PIN	Personal Identification Number, the 4-digit passcode for SIM
Post Emergency mode	Device state immediately following Emergency mode
RF	Radio Frequency

SIM	Subscriber Identity Module, smart card storing GSM mobile subscription identity
URL	Universal Resource Locator, web hyperlink
USB	Universal Serial Bus, power and data connector standard used in TWIG data and charging cables
TWIG Point AGPS	Assisted GPS data feed for TWIG devices
TWIG Point Netloc	Cellular location service
TWIG Beacon	SRD indoor location peripherals for TWIG devices, complementing GPS/AGPS
TWIG Button	Wireless SRD remote alarm button for TWIG devices
TWIG Device	TWIG mobile alarm device, such as TWIG Protector
ManDown	Automatic motion-sensor based alarm trigger method for TWIG devices
Amber alert	Timer-based alarm-trigger method for TWIG devices
SOS cycle	Configurable alarm communication sequence of TWIG devices
SRD	Short Range Devices, an ISM band RF link between TWIG devices and TWIG SRD peripherals
TWIG Tag	SRD attendance monitoring peripheral for TWIG devices