Module	Module key	Module group	Group ID	Module description	T	R	TR	SW
Apollon	0x1XXX	Timings & Alarms	0x00	Defines parameters for measurements and transmission behavior	✓	✓	✓	✓
Apollon	0x1XXX	ToF	0x01	Settings for the ToF sensor	✓		✓	✓
Apollon	0x1XXX	Radar	0x02	Settings for the radar sensor		✓	✓	✓
Apollon	0x1XXX	Accelometer	0x03	Settings for the accelerometer	✓	✓	✓	✓

Radar default setting during commissioning

"Liquid" (for liquid measurements): `tmod = 2 Example S-XXXX-TR-ACC`

"Solid" (for solids): `tmod = 0 Example S-XXXX-SW-TR-ACC`

`When measuring bodies of water, it must be ensured that there is water in the river.`

`FAQs can be found on the last page.`

Tables for cross-product modules (Senticom/Sentivisor) can be found in the Generic NFC and Downlink documentation.

Further information on configuring sensor communication can be found in the respective generic LoRaWAN® , Mioty® or Cellular documentation, depending on the version.

SENTIFACE: GROUP TIMINGS & ALARM 0x00 (T, R, TR, SW)								
Resources	Resource ID	Resource description	Key (NFC/BLE)	Min	Max	Factory setting	Unit	Module key
MEASUREMENT PERIOD	0x00	Specifies the period in which the measured values are recorded. 60 minutes means that a measurement is always carried out by the sensor after 60 minutes.	period	1	660	60	min	XXX1
ABSOLUTE LEVEL CHANGE	0x01	Specifies the absolute amount by which the fill level must change compared to the last transmission for an ALARM transmission to be triggered. This transmission is carried out independently of the normal transmission interval. Always refers to the main measured value.	delta	30	2000	200	mm	XXX1
REGULAR TRANSMISSION INTERVAL	0x02	Number of measurements performed until transmission.	every or pause (depending on version)	1	24	6		XXX1
MASTER VALUE RESOURCE	0x03	• 0: ToF corresponds to ToF algo resource • 1: Radar	mval	0	1	1		XXX1

SENTIFACE: GROUP TOF SETTINGS 0x01 (T, TR, SW)								
resources	Resource ID	Resource ID Description	Key (NFC/BLE)	Min	Max	Factory setting	Unit	Module key
ToF ALGO RESOURCE	0x02	Primary ToF algorithm: • 0:No histogram mode • 1:With histogram mode • 2: ADVANCED FEATURE	algo	0	2	2		XXX1

SENTIFACE: GROUP RADAR SETTINGS 0x02 (R, TR, SW)								
Resource ID	Resource ID	Resource ID Description	Key (NFC/BLE)	Min	Max	Factory setting	Unit	Module key
MINIMUM MEASURING DISTANCE RADAR	0x00	Describes the minimum required distance from which a measurement is carried out.	rsta	50	3000	150	mm	XXX1
MAXIMUM MEASURING DISTANCE RADAR	0x01	Describes the maximum distance up to which measurements are taken.	rend	50	10000	5000	mm	XXX1
RADAR LIMIT VALUE	0x02	Specifies the limit value above which the signal peaks of the sensor must lie in order to be detected (only for *tmod=2*).	rtre	400	10000	2000		XXX1
RADAR SORT MODE	0x03	Defines the sorting logistics of the detected targets: • 0: Strongest echo first • 1: Shortest distance first • 2: Longest distance first	rsor	0	2	0		XXX1
RADAR WAVELET LENGTH	0x04	ADVANCED: Pulse length (radar pulse duration), how long the signal is transmitted; is automatically selected by the sensor	wav	1	5	2		XXX1
RADAR RANGE THRESHOLD MODE	0x05	Mode for threshold adjustment of the values • 0: Phase Variance Mode: Mode for piece goods and Smart Waste (*rstart* and *rend* are not taken	tmod	0	2	2: if Liquid is preset 0: otherwise		XXX1

		into account, instead *tlpr* must be set correctly). • 1: Static Threshold Mode (static threshold values), only objects that have the Radar Cross Section *rcs* are considered. • 2: Dynamic Threshold Algorithm CFAR						
RADAR RCS THRESHOLD	0x06	Limit value for *static threshold* mode	rcdt	-10	40	0		XXX1
RADAR SIGNAL QUALITY	0x07	Gain: The higher sq, the further distances can be received, the higher the power consumption. If sq is set too high, the sensor may become saturated.	sq	-10	30	10		XXX1
RADAR CFAR SENSITIVITY	0x08	Sensitivity of the CFAR algorithm. The radar CFAR sensitivity (CFAR = Constant False Alarm Rate) describes how sensitively a radar target detection system reacts to possible targets while at the same time trying to keep the rate of false alarms constant. • Higher sensitivity→ lower threshold→ more targets detected, but also more false alarms, it also detects weak reflections • Lower sensitivity→ higher threshold→ fewer false alarms.	cfsn	0	100	50		XXX1

RADAR TL PRESET	0x09	Trash level logic preset • 0: RESERVED ADVANCED PROFILE • 1: Plastic waste bin (dual sweep) up to a maximum of 1 meter • 2: Plastic waste bin (single sweep) up to a maximum of 1 meter (sensitivity and error probability lower than in comparison to *1*) • 3: Large container up to 3 meters (dual sweep) • 4: Large container up to 3 meters (single sweep, sensitivity and error probability lower than in comparison to *1*)	tlpr	0	4	3		XXX1
RADAR TL SEQ LEN	0x0A	ADVANCED: Radar Sequence Length	tlsl	0	16	0		XXX1
RADAR TL MED LEN	0x0B	ADVANCED: Radar Median Length	tlml	0	8	0		XXX1
RADAR TL VAR THR	0x0C	ADVANCED: Limit value of the phase variance	tlvt	0	100	0		XXX1
RADAR FILTER TYPE	0x0D	Radar Slow Filter Type (deactivated for Liquid): **Filters are applied to the *master value*** • 0: no filter • 1: ADVANCED filter • 2: AVG Filter	rsft (formerly tlft)	0	2	0: if liquid is preset 2: otherwise		XXX1

RADAR TL SLOW FILTER DEPTH	0x0E	Filter depth: Number of historical values used for the filter algorithm.	rsfd (formerly tlfd)	0	24	3		XXX1
RADAR CFAR NORM	0x0F	ADVANCED: Correction of the **rcs** values. If **double reflections** occur, set the following parameters • 0: No correction • 1: Weak correction (for surfaces) • 2: Strong correction	cfnr	0	2	2		XXX1

SENTIFACE: GROUP ACCELOMETER 0x03 (T, R, TR, SW)								
Resource ID	Resource ID	Resource ID Description	Key (NFC/BLE)	Min	Max	Factory setting	Unit	Module key
CLEARING TIME	0x00	Specifies a time period in seconds in which another opening cannot be triggered again after an opening has been triggered (debounces the openings). The last counted opening is used as the reference value.	ocool	1	600	120	sec	XXX1
ALARM AFTER	0x01	Specifies how long the cover must be open in seconds before an alarm is triggered.	oaaf	60	3600	900	sec	XXX1
ALARM OPENING DETECTION	0x02	Activates or deactivates the opening alarm: 0: deactivated 1: activated	osrc	0	1	1		XXX1
OPEN FLAP ALARM	0x04	Specifies whether an alarm is triggered after the "*ALARM AFTER*" time when the container is open 0: Alarm not active 1: Alarm active	oaen	0	1	0		XXX1

FAQ:

1. "The sensor only returns a single echo and no further echoes. rd 2, ra 2. Rd 3, ra 3 are 0."

This behavior is **not a malfunction** but, depending on the application or environmental conditions, **completely normal** - and in many cases even **desirable**. In this case, the sensor has detected **a clear, dominant target** that reflects strongly enough to suppress all other possible echoes or classify them as irrelevant.

A single, stable echo means:

- **High measurement reliability** with a clear surface or homogeneous fill level
- **Low interference reflections** from container walls, fixtures or surface structures
- **Optimum conditions** for reliable level or distance measurement

Only if several relevant echoes are expected (e.g. in the case of complex tank geometries or overhanging structures) and are permanently absent can it make sense to **check the sensor alignment, radar parameters or environment.**

```
For the "Smart Waste" setting (tmod = 0), only one echo is ever available, as the first object detected is recorded.
```

2. I would like to set the sensor from Smart Waste Profile to Liquid Profile and back. How do I do this?

- "Smart Waste" or piece goods profile: *tmod* = 0
- Liquid profile: *tmod 2* =

3. The sensor measures too many double reflections

Double reflections in radar (also **multi-path echoes** or **multipath reflections**) occur when the radar signal **does not return directly from the target**, but **is reflected via detours**, e.g. via walls, floors, container structures or fixtures.

- *cfnr* = 1
- *cfnr* = 2 (with many double reflections)

4. The sensor has no or "0" values

- Increase *cfsn*
- Increase *sq*

If the sensor continuously provides no measured values or constantly displays **0**, this can have various causes. This behavior is **not necessarily a defect**, but is often due to **configuration or environmental factors**:

- **No target in the field of view**
  → Check whether there is a reflective object **within the configured range.**
  → At very large distances or poorly reflective surfaces (e.g. foam, open grid), the radar backscatter may be too weak.
- **Incorrect alignment of the sensor**
  → Sensor may **not be correctly** aligned **with the target surface** (e.g. too strongly inclined or angled).
  → The main beam direction should be as **perpendicular** as possible to the target surface.
- **Unsuitable radar parameters**
  → Check the settings such as: Radar filter type (e.g. for liquid or solid), sensitivity / gain, minimum and maximum range (e.g. r_min, r_max)
- **Interfering reflections or shadowing**
  → Metal fixtures, covers, grilles or proximity to walls can block the direct echo.
  → In this case, no valid measured value may be detected.
- **Data format or communication error**
  → Ensure that the measurement data is read and interpreted correctly.
  → A value of "0" can also mean: *no valid measured value received* (depending on the protocol or data parser).