

Coiot protocol version

Coiot protocol version can be obtained from option 3332 (COIOT_OPTION_GLOBAL_DEVID) : <devtype>#<devid>#<version>

Devices with FW < v1.8.0 will return version "1", e.g.: SHSW-1#A020A6146209#1

Devices with FW >= v1.8.0 will return version "2", e.g.: SHSW-1#A020A6146209#2

/cit/s "G"

For example:

```
"G":[
  [
    0,
    1101,
    1
  ],
  [
    0,
    1104,
    136
  ]
]
```

There are no changes in the format of the status packet. As before, each property is communicated with a <channel> (for now, always 0), <id> and <value>.

Serial

v1.8.0 will introduce a new internal mechanism for incrementing the serial of Coiot status packets.

- Each time there is a "significant" change in the device state (input/output change, new measurements, ...), the serial will be incremented and a new Coiot status packet with this serial will be sent. Which changes are "significant" and which not is decided by the device, using e.g. internal thresholds etc.

- From the above follows that **receiving a Coiot status packet with new serial is an indication you must process it.**

Note: It IS POSSIBLE to receive a Coiot status packet with new serial but no changes in the content compared to the previous one. Short explanation: this can happen when a property has changed and the device has increased the serial, but the property is not included in the Coiot status packet. Long explanation: in v1.8.0 the serial for Cloud and Coiot status packets has been unified to make it possible to relate between the two. Since Coiot status packets only contain a subset of the information sent to Cloud (space restrictions, stuff only Cloud is interested in, etc.) it's normal to sometimes receive Coiot status packets with increased serial but unchanged content.

- From the above follows that **receiving a Coiot status packet with unchanged serial is an indication you can drop it.**

Note: It IS POSSIBLE to receive a Coiot status packet with same serial but changed content compared to the previous one. For example, let's say you have set periodic Coiot status updates to be every 15s. If some measurement in the device changes only a little bit (below "significant" threshold), you'll be getting new packets every 15s with something like "value":23.15, "value":23.16, "value":23.17,... but the serial will remain the same. It's ok to drop such packets. When the measurement changes "enough", you'll get a new packet with incremented serial.

- Serial will always be incremented monotonically (i.e. +1). If you have a packet with serial "4" and the next is with serial "6" it means "5" got lost and didn't reach you.

/cit/d "blk"

For example:

```
"blk":[
  {
    "I":1,
    "D":"relay_0"
  },
  {
    "I":2,
    "D":"relay_1"
  },
  {
    "I":3,
    "D":"device"
  }
]
```

"I":<id> (mandatory)

- <id> is recommended to start from 1 for the first declared block and increment monotonically (i.e. +1) for subsequent blocks. Right now all devices (except Shelly 2 / Shelly 2.5 in relay mode) follow this recommendation, but in general it's not forbidden to declare blocks with arbitrary <id>s.

"D":<description> (mandatory)

- <description> is recommended to be one word, camelCase or camelCase_N (where N is some number). Right now all devices follow this recommendation, but in general it's not forbidden to have longer descriptions.
- "device" block will always be present.

/cit/d "sen"

For example:

```
"sen":[
  {
    "I":1101,
    "T":"S",
    "D":"output",
    "R":"0/1",
    "L":1
  },
  {
    "I":1201,
    "T":"S",
    "D":"output",
    "R":"0/1",
    "L":2
  }
]
```

According to the new Coiot convention, device descriptions will strive to provide *all* properties supported by the device, even if they are currently disabled/unavailable on the specific device. For example, a Shelly 1 will always include a description of properties related to external (add-on) sensors, even if they are not currently attached (but of course, in this case they will be hidden from the status packet). At the moment, the only exception to this is Shelly 2 / Shelly 2.5, as there simply isn't enough space to include all properties for relay and roller mode, and descriptions change depending on the mode.

"I":<id> (mandatory)

All devices will follow an internal scheme to generate <id>s for properties (i.e. specific <id>s map to specific properties), but this should NOT be relied upon. You should assume <id>s have no external meaning and treat them just as numbers to precisely "name" a property.

"T":<type> (mandatory)

- <type> will always be 1 to 3 characters, only capital letters.

For now the following types are declared:

"A"	Alarm
"B"	Battery level
"C"	Concentration
"E"	Energy
"EV"	Event
"EVC"	Event counter
"H"	Humidity
"I"	Current
"L"	Luminosity
"P"	Power
"S"	Status (catch-all if no other fits)
"T"	Temperature
"V"	Voltage

"EV" (Event) and "EVC" (Event counter) are newly introduced types to be able to communicate the occurrence of events. Right now such events are for example shortpush/longpush of buttons – devices will send a property of type "EV" to denote the exact event type ("S" = shortpush, "L" = longpush), and a property of type "EVC" that will increment its value when a new event occurs (e.g. to be able to know that two consecutive longpushes are actually two separate events). Please see "Input event" and "Input event counter" in the property list below for additional information.

"D":<description> (mandatory)

- <description> is recommended to be one word, camelCase or camelCase_N (where N is some number) - e.g. "output", "rollerPos". Right now all devices follow this recommendation, but in general it's not forbidden to have longer descriptions (consider them "free text" - for a human reading the description to get a better understanding of the property).

"U":<unit> (optional)

- "U":<unit> is a newly introduced optional attribute. If it's necessary to specify a dimension for a property, it will be done here, not in <type> or <description>.

For now the following units are declared:

"W"	Watts
"Wmin"	Watt minutes
"Wh"	Watt hours
"V"	Volts
"A"	Amperes
"C"	Celsius
"F"	Fahrenheit
"K"	Kelvin
"deg"	degrees (angle)
"lux"	Lux
"ppm"	parts per million
"s"	seconds

"R":<range> (optional)

<range> has been allowed to be either:

- a single string, specifying normal range in form "from/to", "valueX/valueY/.../valueZ" or "<I|U><8|16|32>", the latter showing expected signed or Unsigned integer size
- an array of strings, specifying normal range and invalid value in form ["<normal>","<invalid>"]. "<invalid>" = the value you'll get if "real" data is unavailable at the moment (e.g. sensor broke)

For example:

"0/100" - normal range is from 0 to 100; no invalid value

"obstacle/overpower/safety_switch" - normal range is "obstacle", "overpower" or "safety_switch"; no invalid value

["0/255","999"] - normal range is from 0 to 255; invalid value is 999

["U16","-1"] - normal range is uint16, invalid value is -1

"L":<links> (mandatory)

No changes here - <links> can be a single integer or array of integers with <id>s of device blocks to which a property relates.

List of properties

Below is list of all properties currently reported by the devices with short comments on their meaning. Please bear in mind that this is just a generalized example – attributes such as e.g. <range> are device specific and can differ from what you see here.

OUTPUT

Output state	type	"S"	OFF/ON state of an output (relay/light channel).
	description	"output"	
	unit	-	
	range	"0/1"	
Roller state	type	"S"	State of the roller. Currently applicable for Shelly 2 / Shelly 2.5 in roller mode.
	description	"roller"	
	unit	-	
	range	"open/close/stop"	
Roller position	type	"S"	Position (%) of the roller (fully opened - 0, fully closed – 100), if roller is calibrated. Currently applicable for Shelly 2 / Shelly 2.5 in roller mode.
	description	"rollerPos"	
	unit	-	
	range	["0/100","-1"]	
Output total work time	type	"S"	Total work (ON) time of an output. Stored in non-volatile memory. Currently applicable for Shelly Air.
	description	"totalWorkTime"	
	unit	s	
	range	"U32"	
Valve state	type	"S"	State of attached valve, currently applicable for Shelly Gas.
	description	"valve"	
	unit	-	
	range	["closed/opened/not_connected/failure/closing/opening/checking","unknown"]	

INPUT

Input state	type	"S"	OFF/ON state of an input (switch).
	description	"input"	
	unit	-	
	range	"0/1"	

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Input event	type	"EV"	This is a new property, that together with "Input event counter" shall be used to evaluate events such as shortpush/longpush/etc. It provides a short string, denoting the last detected input event ("S" = shortpush, "L" = longpush, ...). "" (empty string), means that no event has occurred yet, or that the last detected event is invalid (i.e. not among the recognized patterns). Please note that range of detected events is device specific. Not stored in non-volatile memory.
	description	"inputEvent"	
	unit	-	
	range	["S/L/SS/SSS/SL/LS", ""]	
Input event counter	type	"EVC"	Incremented each time a new input event is detected (the exact type of the event doesn't matter). The counter is not stored in non-volatile memory.
	description	"inputEventCnt"	
	unit	-	
	range	"U16"	

SENSORS

External temperature C	type	"T"	Temperature (in C) measured by an external sensor (e.g. Shelly 1 with DS1820/DHT22 add-on) or ambient temperature (e.g. Shelly H&T). This is a separate property since some devices also measure internal device temperature and it should be distinguished between the two. 999 if no valid temperature reading is available at the moment.
	description	"extTemp"	
	unit	"C"	
	range	["-55/125", "999"]	
External temperature F	type	"T"	Same as above but in F.
	description	"extTemp"	
	unit	"F"	
	range	["-67/257", "999"]	
Humidity	type	"H"	Measured humidity (e.g. Shelly 1 with DHT22 add-on or Shelly H&T). 999 if no valid humidity reading is available at the moment.
	description	"humidity"	
	unit	-	
	range	["0/100", "999"]	
Internal device temperature C	type	"T"	This is the internal temperature (in C) measured by devices which control an output (relay, light) to prevent them from overheating (e.g. Shelly 1PM). 999 if no valid temperature reading is available at the moment.
	description	"deviceTemp"	
	unit	"C"	
	range	["-40/300", "999"]	
Internal device temperature F	type	"T"	Same as above but in F.
	description	"deviceTemp"	
	unit	"F"	
	range	["-40/572", "999"]	
Luminosity	type	"L"	Luminosity measured by a light sensor (e.g. Shelly Sense). -1 if no valid sensor reading is available at the moment.
	description	"luminosity"	
	unit	"lux"	
	range	["U32", "-1"]	
Concentration	type	"C"	Measured concentration of a substance. Currently applicable for Shelly Gas to measure gas concentration in ppm. -1 when there is a sensor error, reading temporarily unavailable (e.g. sensor not ready), etc.
	description	"concentration"	
	unit	"ppm"	
	range	["U16", "-1"]	
Door/window state	type	"S"	Door/window opened or closed. Currently applicable for Shelly DoorWindow. -1 if no valid sensor reading is available at the moment.
	description	"dwIsOpened"	
	unit	-	
	range	["0/1", "-1"]	
Door/window tilt	type	"S"	Tilt of door/window. Currently applicable for Shelly DoorWindow. -1 if no valid sensor reading is available at the moment.
	description	"tilt"	
	unit	"deg"	
	range	["0/180", "-1"]	
Luminosity level	type	"S"	Level of luminosity, evaluated by comparing the reading of a light sensor to set thresholds (e.g. Shelly DoorWindow). "unknown" if no valid sensor reading is available at the moment.
	description	"luminosityLevel"	
	unit	-	
	range	["dark/twilight/bright", "unknown"]	
	type	"B"	Battery level (%) of sleeping devices (e.g. Shelly H&T). -1 if no valid

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Battery level	description	"battery"	sensor reading is available at the moment.
	unit	-	
	range	["0/100", "-1"]	
Charger	type	"S"	Presence of external power supply (e.g. Shelly Sense). -1 if no valid sensor reading is available at the moment.
	description	"charger"	
	unit	-	
	range	["0/1", "-1"]	
Sensor operation	type	"S"	Sensor operating mode. Currently applicable for Shelly Gas. "unknown" returned when e.g. communication with the sensor is lost.
	description	"sensorOp"	
	unit	-	
	range	["warmup/normal/fault", "unknown"]	
Self-test state	type	"S"	Currently applicable for Shelly Gas, shows state of the internal self-test.
	description	"selfTest"	
	unit	-	
	range	"not_completed/completed/running/pending"	
Sensor error	type	"S"	Absence/presence of an internal sensor error.
	description	"sensorError"	
	unit	-	
	range	"0/1"	
Day/night	type	"S"	Day/night level of luminosity, evaluated by comparing the reading of a light sensor to set thresholds (e.g. Shelly Spot). -1 if no valid sensor reading is available at the moment.
	description	"dayLight"	
	unit	-	
	range	["0/1", "-1"]	
External input state	type	"S"	From v1.8.0 devices which support add-ons (e.g. Shelly 1PM) will be able to read not only external temp/humidity sensors, but also external low-power switches.
	description	"extInput"	
	unit	-	
	range	"0/1"	

POWER & ENERGY

Output instantaneous power	type	"P"	Instantaneous power consumed by the electrical appliance attached to an output (relay/light channel). -1 if no valid meter reading is available at the moment.
	description	"power"	
	unit	"W"	
	range	["0/3500", "-1"]	
Roller instantaneous power	type	"P"	Instantaneous power consumed by the roller. Currently applicable for Shelly 2 / Shelly 2.5 in roller mode. -1 if no valid meter reading is available at the moment.
	description	"rollerPower"	
	unit	"W"	
	range	["0/3680", "-1"]	
Output energy counter (total)	type	"E"	Total energy consumed by the electrical appliance attached to an output (relay/light channel) since last reboot. -1 if no valid meter reading is available at the moment. Not stored in non-volatile memory, so an accumulator should be kept locally.
	description	"energy"	
	unit	"Wmin"	
	range	["U32", "-1"]	
Roller energy counter (total)	type	"E"	Energy consumed by the roller since last reboot. Currently applicable for Shelly 2 / Shelly 2.5 in roller mode. -1 if no valid meter reading is available at the moment. Not stored in non-volatile memory, so an accumulator should be kept locally.
	description	"rollerEnergy"	
	unit	"Wmin"	
	range	["U32", "-1"]	
Emeter active power	type	"P"	Active power consumed by the electrical circuit monitored by an emeter, currently applicable for Shelly EM / Shelly 3EM. -1 if no valid meter reading is available at the moment
	description	"power"	
	unit	"W"	
	range	["0/3500", "-1"]	
Emeter total energy (non-volatile)	type	"E"	Total energy consumed by the electrical circuit monitored by an emeter, currently applicable for Shelly EM / Shelly 3EM. -1 if no valid meter reading is available at the moment. Stored in non-volatile memory.
	description	"energy"	
	unit	"Wh"	
	range	["U32", "-1"]	
Emeter total returned energy	type	"E"	Total returned energy by the electrical circuit monitored by an emeter, currently applicable for Shelly EM / Shelly 3EM. -1 if no valid meter reading is available at the moment. Stored in non-volatile
	description	"energyReturned"	

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returned energy (non-volatile)	unit	"Wh"	memory.
	range	["U32", "-1"]	
Emeter voltage	type	"V"	Voltage of the electrical circuit monitored by an emeter, currently applicable for Shelly EM / Shelly 3EM. -1 if no valid meter reading is available at the moment.
	description	"voltage"	
	unit	"V"	
	range	["0/265", "-1"]	
Emeter current	type	"I"	Current of the electrical circuit monitored by an emeter, currently applicable for Shelly EM / Shelly 3EM. -1 if no valid meter reading is available at the moment.
	description	"current"	
	unit	"A"	
	range	["0/120", "-1"]	
Emeter power factor	type	"S"	Power factor of the electrical circuit monitored by an emeter, currently applicable for Shelly EM / Shelly 3EM. -1 if no valid meter reading is available at the moment.
	description	"powerFactor"	
	unit	-	
	range	["0/1", "-1"]	

LIGHTS

Brightness	type	"S"	Light channel brightness (%).
	description	"brightness"	
	unit	-	
	range	"0/100"	
Gain	type	"S"	Light channel gain (%).
	description	"gain"	
	unit	-	
	range	"0/100"	
Color temperature	type	"S"	Light channel color temperature.
	description	"colorTemp"	
	unit	"K"	
	range	"2700/6500"	
White level (warm/cool)	type	"S"	Light channel white level (%), warmest (0) to coolest (100).
	description	"whiteLevel"	
	unit	-	
	range	"0/100"	
Red brightness	type	"S"	Light channel red component brightness.
	description	"red"	
	unit	-	
	range	"0/255"	
Green brightness	type	"S"	Light channel green component brightness.
	description	"green"	
	unit	-	
	range	"0/255"	
Blue brightness	type	"S"	Light channel blue component brightness.
	description	"blue"	
	unit	-	
	range	"0/255"	
White brightness	type	"S"	Light channel white component brightness.
	description	"white"	
	unit	-	
	range	"0/255"	

ALARMS

Internal device overtemperature	type	"A"	Absence/presence of internal device overtemperature condition. -1 if no valid temperature reading is available at the moment.
	description	"overtemp"	
	unit	-	
	range	["0/1", "-1"]	
Output overpower	type	"A"	Absence/presence of an overpower condition. -1 if no valid meter reading is available at the moment.
	description	"overpower"	
	unit	-	
	range	["0/1", "-1"]	
Roller stop	type	"A"	Roller stop reason. Currently applicable for Shelly 2 / Shelly 2.5 in roller mode.
	description	"rollerStopReason"	

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Roller stop reason	unit	-	
	range	"normal/safety_switch/obstacle/overpower"	
Load error	type	"A"	Absence/presence of load error (e.g. Shelly Dimmer).
	description	"loadError"	
	unit	-	
	range	"0/1"	
Smoke alarm	type	"A"	Absence/presence of smoke. -1 if no valid sensor reading is available at the moment.
	description	"smoke"	
	unit	-	
	range	["0/1", "-1"]	
Flood alarm	type	"A"	Absence/presence of flood. -1 if no valid sensor reading is available at the moment.
	description	"flood"	
	unit	-	
	range	["0/1", "-1"]	
Motion alarm	type	"A"	Absence/presence of motion. -1 if no valid sensor reading is available at the moment.
	description	"motion"	
	unit	-	
	range	["0/1", "-1"]	
Gas alarm	type	"A"	Absence/presence of gas. Currently applicable for Shelly Gas. "test" returned when alarm is due to a triggered self-test. "unknown" if no valid sensor reading is available at the moment.
	description	"gas"	
	unit	-	
	range	["none/mild/heavy/test", "unknown"]	
Overpower value	type	"P"	From v1.8.0 some devices will be able to report not only a boolean flag of overpower condition, but also the power value at which the overpower condition has occurred. 0 when in normal operation. -1 if no valid meter reading is available at the moment.
	description	"overpowerValue"	
	unit	"W"	
	range	["U32", "-1"]	
Door/window vibration	type	"A"	Absence/presence of door/window vibration. Currently applicable for Shelly DoorWindow. -1 if no valid sensor reading is available at the moment or vibration detection is disabled.
	description	"vibration"	
	unit	-	
	range	["0/1", "-1"]	

GENERAL

Mode	type	"S"	For devices with switchable modes (e.g. Shelly 2.5), indicates current mode (e.g. "relay", "roller", "color", "white", ...)
	description	"mode"	
	unit	-	
	range	"color/white"	
Wakeup event	type	"EV"	For battery operated (i.e. sleeping) devices (e.g. Shelly H&T) indicates why the device woke up. Please note that the payload for this property's value in status ("G") will be an array of strings with one or more elements, for example ["sensor", "alarm"].
	description	"wakeupEvent"	
	unit	-	
	range	["battery/button/periodic/poweron/sensor/alarm", "unknown"]	
Config changed event counter	type	"EVC"	Incremented each time a device setting is changed. Available on all devices.
	description	"cfgChanged"	
	unit	-	
	range	"U16"	