

Holley DTSD545 Protocol Message Format

The message consists of a message header, message body and checksum code. The CheckSum8 of Modulo 256 is calculated starting from header to the last byte of message body.

Size (bytes)	1	[0..19]	1
Part	Message Header	Message Body	Checksum

Message types

For meter reading following messages are required:

The Meter Reading Message (0x0E)

Sent by the meter once a day on LoRaWAN Fport 2. The sending time during the day should be random, not on the hour. It is required that meters are not sending readings at the same time to avoid collisions.

Size (bytes)	1	[0..19]	1
Part	MRMHDR	Register values	Checksum

MRMHDR = 0x0E

Register values:

- C.1.0 Last 8 characters of meter serial number BCD – 4 bytes
- 1.8.0 Positive active energy total [kWh] BCD, 5 bytes, 2 decimal places
- 1.8.1 Positive active energy in tariff T1 [kWh] BCD 5 bytes, 2 decimal places
- 1.8.2 Positive active energy in tariff T2 [kWh] BCD 5 bytes, 2 decimal places

Example for Meter Reading Message

MRMHDR	Serial no BCD code, 4bytes Energy value BCD code, 3 * 5 = 15 bytes, 2 decimal places	Checksum
0x 0E	0x 34 45 12 34 01 00 00 56 78 20 12 45 67 90 45 09 34 78 56	0x 5A

explanation :

- C.1.0 Last 8 characters of the meter serial number = 34451234
- 1.8.0 = 01000056.78KWH
- 1.8.1= 20124567.90 KWH
- 1.8.2= 45093478.56 KWH

Meter Control Message (0x0F)

Sent by the server on LoRaWAN Fport 2 for setting time interval for Meter reading messages, confirmed/ unconfirmed type. If confirmed type then in case no confirmation from the server it should be repeated Max Retries times. Setting and removing registers for Meter Reading Message.

Size (bytes)	1	4	4	1	1	1
Part	MCMHDR	Interval unconfirmed	Interval confirmed	Max Retries	Energy item	Checksum

MCMHDR = 0x0F

Energy item for setting of requested registers

Energy item (bits)	Description
00000000	Only Meter serial number: C.1.0
00000001	Meter serial number and A+ : C.1.0&1.8.0
00000010	Meter serial number and A+ and A+ T1 : C.1.0&1.8.0&1.8.1
00000011	Meter serial number and A+ and A+ T1 and A+ T2 : C.1.0&1.8.0&1.8.1&1.8.2

Example for Meter Control Message

MRMHDR	Interval unconfirmed, Interval confirmed, Max Retries, Energy item, BCD code	Checksum
0x 0F	0x 00 00 00 15 00 00 00 00 00 03	0x 27

explanation :

Interval unconfirmed = 00 00 00 15 = 15min

0x 0F	0x 00 00 00 00 00 00 00 05 03 03	0x 1A
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explanation :

Interval confirmed = 00 00 00 05 = 05 min Max retries = 03

For RTC synchronisation following messages are needed:

Setting the Clock Message (0x31)

Sent by the server on LoRaWAN Fport 4

Size (bytes)	1	7	1
Part	SCMHDR	Date: year, month, day, hour, min, sec, weekday, BCD code	Checksum

SCMHDR = 0x31

Example for Setting the Clock Message

SCMHDR	Year,month,day,hour,min,sec,week, BCD code	Checksum
0x 31	0x 19 12 12 12 12 22 04	0x B8

explanation :

Date = 19 12 12 12 12 22 04 = 19y 12m 12d 12h 12m 22s Thursday
(monday is 01)

Time Correction Request Message (0x32)

The message with time correction request, sent by the meter after every seven days on LoRaWAN Fport 4 The sending time during the day should be random, not on the hour. It is required that meters are not sending messages at the same time to avoid collisions.

Size (bytes)	1	7	1
Part	TCRMHDR	Current time at sending the message: Year, month, day, hour, min, sec, weekday, BCD code	Checksum

TCRMHDR = 0x32

Example for Time Correction Request Message

TCRMHDR	Year,month,day,hour,min,sec,week BCD code,	Checksum
0x 32	0x 19 12 12 12 12 22 04	0x B9

explanation :

Date = 0x 19 12 12 12 12 22 04 = 19y 12m 12d 12h 12m 22s Thursday
(monday is 01)

Real-time Clock Adjustment Message (0x33)

Sent by the server on LoRaWAN Fport 4 for meter clock adjustment

Size (bytes)	1	4	1
Part	CAMHDR	BCD 4 bytes value in seconds for adjusting the clock, The highest bit it sign bit	Checksum

CAMHDR=0x33

Example for Real-time Clock Adjustment Message

CAMHDR	Seconds, BCD The highest bit it sign bit	Checksum
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0x 33	0x 00 00 00 10	0x43
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explanation:

The highest bit is sign bit. 0x 00 00 00 10 means +10s, if the current time is 2020, March 5th, 15:18:14. After setting it is 15:18:24 on March 5, 2020.

The data 0x 80 00 00 10 represents the time -10s, the current time is March 5, 2020 15:18:14. After setting it is 15:18:04 on March 5, 2020.