

GENERAL:

All data and parameters are written MSB first.
All reserved data and parameters are written as 0.
All values without prefix "0x" are decimal.

If current Record less then LogRecSize, empty bytes are filled by 0.
Timestamp is written by external command or together with events.
When Log becomes "wrapped", Meter writes "Timestamp" at first Record.

Common Logger Record structure

| | | | |
|-----------------------------|--|---------------------------|--------------------------------|
| RecordType (high nibble) | Record Mask or Record Subtype (low nibble) | Sensor Status (1 byte) | Data or Service Information |
|-----------------------------|--|---------------------------|--------------------------------|

Logger Configuration parameters:

| offset | name | contents |
|--------|--------------|---|
| 0-1 | LogAddrStart | Start Address of EEPROM |
| 2-3 | LogAddrEnd | End Address of EEPROM |
| 4 | LogRecSize | Record Size (bytes). Must be 6, 8, 10, 12, 14 or 16 bytes. If LogRecSize== 0x00 – Logger is Off. |
| 5 | LogPeriod | Number of Measurement cycles without logging. If LogPeriod=0, then do logging every Measurement cycle. |
| 6 | StartupSleep | Startup Sleep Duration, [seconds] |
| 7 | reserved | 0x00 |
| 8 | OffsetData0 | Offset of Data0 in RAM |
| 9 | SizeData0 | Size of Data0 (bytes) |
| 10 | OffsetData1 | Offset of Data1 in RAM |
| 11 | SizeData1 | Size of Data1 (bytes) |
| 12 | OffsetData2 | Offset of Data2 in RAM |
| 13 | SizeData2 | Size of Data2 (bytes) |
| 14 | OffsetData3 | Offset of Data3 in RAM |
| 15 | SizeData3 | Size of Data3 (bytes) |

If any SizeDataN field == 0, this data is not written to Logger.

Logger Record types:

- 0 – Data
- 1 – Timestamp
- 2 – Meter Power ON
- 3 – Start of Measurements (set of jumper)
- 4 – End of Measurements (removing of jumper)
- 5 – reserved
- 6 – reserved
- 7 – reserved
- 8 – ABC Completed
- 9 – Zero Calibration Completed
- 10 – Background Calibration Completed
- 11 – reserved
- 12 – reserved
- 13 – reserved
- 14 – reserved
- 15 – Marker of last record in Logging

Sensor Status:

| Mask | Purpose |
|------|---|
| 0x80 | Production(1) or Non-Production(0) Mode |
| 0x40 | ErrorStatus=0 (1) or ErrorStatus!=0 (0) |
| 0x20 | Battery Low Alarm (1) or not (0) |
| 0x10 | Battery Low Warning (1) or not (0) |
| 0x08 | reserved for future use |
| 0x04 | reserved for future use |
| 0x02 | reserved for future use |
| 0x01 | reserved for future use |

Data

| | | | | | | |
|---------------------------------|------------------------------|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| RecordType = 0 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | Data0 (SizeData0 bytes) | Data1 (SizeData1 bytes) | Data2 (SizeData2 bytes) | Data3 (SizeData3 bytes) |
|---------------------------------|------------------------------|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------|

Timestamp
total size = 6 bytes

| | | | |
|---------------------------------|------------------------------|---------------------------|------------------------|
| RecordType = 1 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | Timestamp (4 bytes) |
|---------------------------------|------------------------------|---------------------------|------------------------|

Meter Power ON
total size = 4 bytes

| | | | |
|---------------------------------|------------------------------|---------------------------|--|
| RecordType = 2 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | MeterControl TBD: Startup Status (1 byte) Result of SelfCheck, measurement Vbattery, etc... |
|---------------------------------|------------------------------|---------------------------|--|

Start of Measurements
total size = 6 bytes

| | | | |
|---------------------------------|------------------------------|---------------------------|------------------------|
| RecordType = 3 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | Timestamp (4 bytes) |
|---------------------------------|------------------------------|---------------------------|------------------------|

End of Measurements
total size = 6 bytes

| | | | |
|---------------------------------|------------------------------|---------------------------|------------------------|
| RecordType = 4 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | Timestamp (4 bytes) |
|---------------------------------|------------------------------|---------------------------|------------------------|

ABC completed
total size = 6 bytes

| | | | | |
|---------------------------------|------------------------------|---------------------------|----------------------|-----------------------------------|
| RecordType = 8 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | New Zero_CO2_Trim | CO2_Value (before calibration) |
|---------------------------------|------------------------------|---------------------------|----------------------|-----------------------------------|

Zero Calibration completed
total size = 6 bytes

| | | | | |
|---------------------------------|------------------------------|---------------------------|----------------------|-----------------------------------|
| RecordType = 9 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | New Zero_CO2_Trim | CO2_Value (before calibration) |
|---------------------------------|------------------------------|---------------------------|----------------------|-----------------------------------|

Background Calibration completed
total size = 6 bytes

| | | | | |
|----------------------------------|------------------------------|---------------------------|----------------------|-----------------------------------|
| RecordType = 10 (high nibble) | reserved = 0 (low nibble) | Sensor Status (1 byte) | New Zero_CO2_Trim | CO2_Value (before calibration) |
|----------------------------------|------------------------------|---------------------------|----------------------|-----------------------------------|

Last Record
total size = 1 byte

| | |
|----------------------------------|------------------------------|
| RecordType = 15 (high nibble) | reserved = 0 (low nibble) |
|----------------------------------|------------------------------|

Timestamp record must be
before these records

Logger Configuration

Clear Logger Configuration
(write 16 zeroes to EEPROM at 0x0200...0x020F)

Write Logger Configuration parameters to EEPROM:

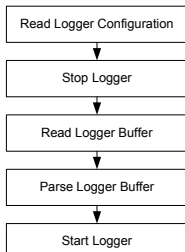
| offset | name | default content for P330-CNT |
|--------|--------------|--|
| 0-1 | LogAddrStart | 0x0210 – start address of buffer, MSB first |
| 2-3 | LogAddrEnd | 0x1FFF – end address of buffer, MSB first |
| 4 | LogRecSize | 0x00 – keep Logger OFF |
| 5 | LogPeriod | 0x00 – do logging every measurement cycle |
| 6 | StartupSleep | 0x3C – Sleep 60 seconds before first measurement |
| 7 | reserved | 0x00 |
| 8 | OffsetData0 | 0x08 – CO ₂ Value address |
| 9 | SizeData0 | 0x02 – CO ₂ Value size, 2 bytes |
| 10 | OffsetData1 | 0x12 – SpaceTemp address |
| 11 | SizeData1 | 0x02 – SpaceTemp size |
| 12 | OffsetData2 | 0x14 – RelativeHumidity address |
| 13 | SizeData2 | 0x02 – RelativeHumidity size |
| 14 | OffsetData3 | 0x16 – MixingRatio address |
| 15 | SizeData3 | 0x02 – MixingRatio size |

Set Timestamp
Write number of seconds since 1 January 2000 to RTC (RAM 0x65, DWORD)

Write parameter:
LogRecSize = 10 (Logger ON)

Send command
ResetLogger
(Logger sets pointer to LogAddrStart and set flag for writing Timestamp to it. Old data has lost.)

Read data from Logger (briefly)



NOTES:

1. Flag "TS_unknown" is used for management of a validity of timestamps. If flag is set (TRUE), then record has valid timestamp. Otherwise timestamp is not actual and written as 0.
2. MeasurementPeriod is 3-byte period of measurements, expressed in seconds. It is stored in EEPROM. See g:\Utveck\PROJEKT\Platforms\P330\MemoryAllocation\P330 RAM and EEPROM mapping rev1_08.xls

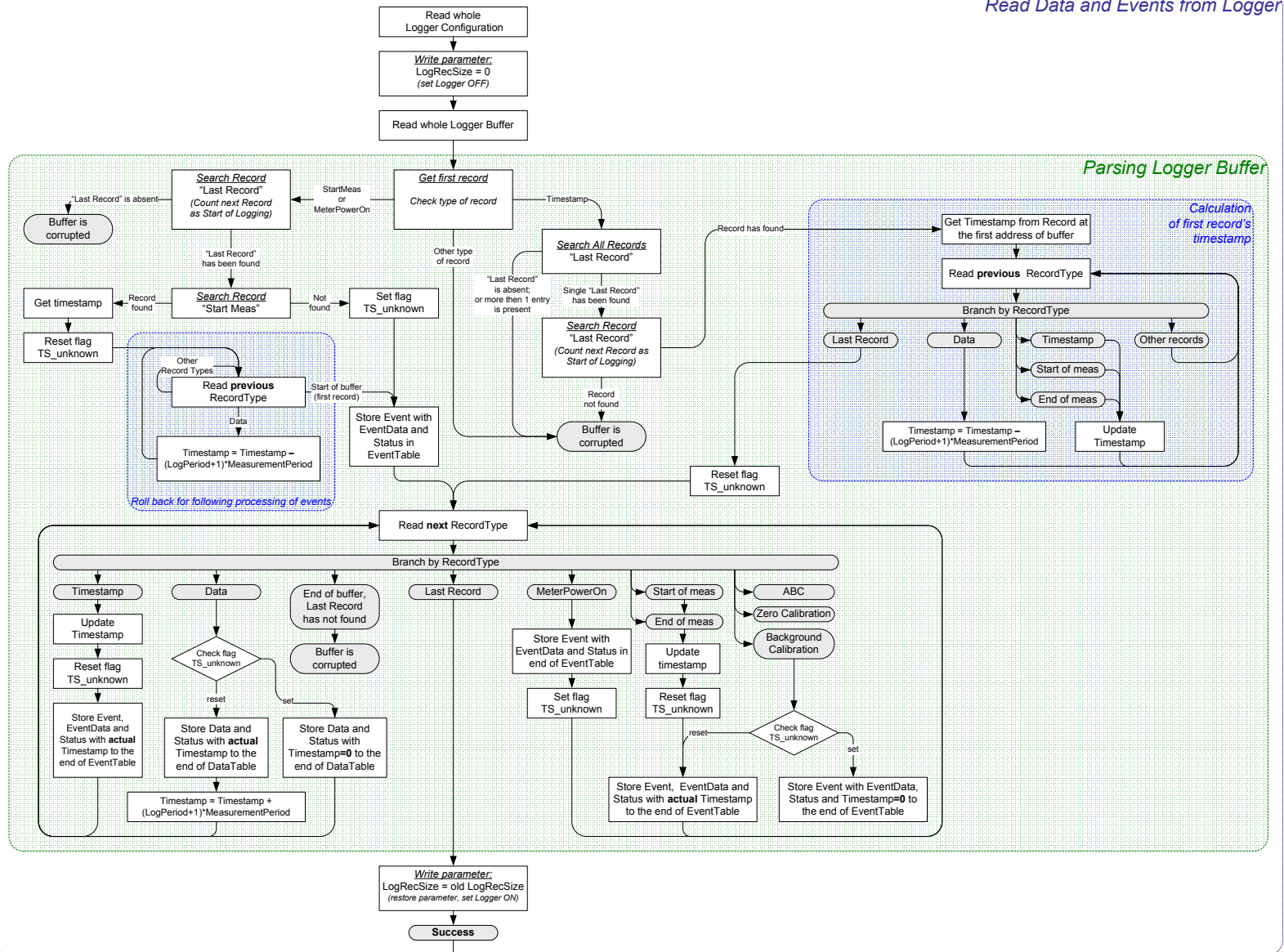
The difference is following:

- MeasurementPeriod defines period of start of measurements;
- SleepPeriod defines time interval between end of previous and start of next measurement.

SCR commands for P330BLG:

- 0x32 Restart Logger (erase old Logger data)
- 0x33 Reinitialize Logger (keep old Logger data)
- 0x34 Actualize RTC in Logger (writes Timestamp in Logger)

Read Data and Events from Logger



Example of DataTable

| Timestamp | Status | CO ₂ Value | SpaceTemp | RH | MixingRatio |
|---------------------------------|--------|-----------------------|-----------|----|-------------|
| 270054000 (22 July 2008, 15:00) | 0x00 | 500 | 3000 | 50 | 800 |
| 270054300 (22 July 2008, 15:05) | 0x00 | 700 | 3000 | 50 | 800 |
| 270054600 (22 July 2008, 15:10) | 0x00 | 900 | 3000 | 50 | 800 |
| 270054900 (22 July 2008, 15:15) | 0x00 | 1100 | 3000 | 50 | 800 |
| 270055200 (22 July 2008, 15:20) | 0x00 | 1300 | 3000 | 50 | 800 |
| ... | | | | | |

Example of EventTable

| Timestamp | Status | Event | EventData |
|---------------------------------|--------|-----------|---|
| 270054000 (22 July 2008, 15:00) | 0 | StartMeas | |
| 270055200 (22 July 2008, 15:20) | 0 | EndMeas | |
| 270055260 (22 July 2008, 15:21) | 0 | ZeroCal. | 51 ⁽¹⁾ , 1300 ⁽²⁾ |
| ... | | | |

There are:

- (1) – Zero_CO₂ Trim after calibration
- (2) – CO₂ Value before calibration

| TITLE | | | |
|-----------|-----------------------|---------------------|----------------|
| P330BLG | | | |
| Rev. 1.06 | REVISED 2009-01-29 | DRAWN BY V.Popov | PAGE 2 OF 2 |