

Writing Data Flash

Guide to write DF in bq78z100 and other flash based gauges

January 2021

Writing to Dataflash

Wr(0x3e,target_DF_address,new_data)

- Target_DF_address can be found in the TRM, sent in little endian.
- New_data is the data you wish to upload to the DF location.

Wr(0x60,checksum,length)

- 0x60 is the checksum command, must be used to verify DF write and keep data.
- Checksum = $0xFF - (\text{target_address} + \text{new_data})$
- Length = command_size + data_size + checksum_size + length_size

Procedure also works for multibyte updates.

Writing to Dataflash

Example: write 0x05 to Manufacturer Info Block A01.

Sequence:

- $Wr(0x3e, 0x41, 0x40, 0x05)$
- $Wr(0x60, \text{checksum}, \text{length})$
- $\text{Checksum} = 0xFF - (0x41 + 0x40 + 0x05) = 0xFF - 0x86 = 0x79$
- $\text{Length} = \text{command_size}(=2) + \text{data_size}(=1) + \text{checksum_size}(=1) + \text{length_size}(=1) = 0x05$

Check data in the manufacturer info block:

- $Wr(0x3e, 0x41, 0x40)$
- $Rd(0x3e, \text{read } 32\text{bytes})$

Example Single Write

Registers Data Memory Advanced Comm

Advanced Comm HDQ

HDQ Master Control Panel

Byte Read/Write

Start Register (Hex) 3e

Bytes to Write (Hex) 41 40 Write

Number of Bytes to Read (Decimal) 32 Read




Transaction Log

TimeStamp	Rd...	Addr...	Regi...	Le...	Data
2021-01-27 05:...	Wr	N/A	3e	2	41 40
2021-01-27 05:...	Rd	N/A	3e	32	41 40 01 62 63 64 05 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 7A 78 79 30 31 32 33
2021-01-27 05:...	Wr	N/A	3e	3	41 40 05
2021-01-27 05:...	Wr	N/A	60	2	79 05 Value changed in DF
2021-01-27 05:...	Wr	N/A	3e	2	41 40
2021-01-27 05:...	Rd	N/A	3e	32	41 40 05 62 63 64 05 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 7A 78 79 30 31 32 33

- Example implemented using advanced communication tab of bqStudio.
- Can be implemented with MCU following the same procedure.
- Example should also work with I2C.

Example Multi Write

Advanced Comm HDQ

 Clear Log  Save Log  Calculator

HDQ Master Control Panel

Byte Read/Write

Start Register (Hex)

Bytes to Write (Hex)

Number of Bytes to Read (Decimal)

Transaction Log

TimeStamp	Rd...	Addr...	Regi...	Le...	Data
2021-01-27 05:...	Wr	N/A	3e	2	41 40
2021-01-27 05:...	Rd	N/A	3e	32	41 40 01 62 63 64 05 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 7A 78 79 30 31 32 33
2021-01-27 05:...	Wr	N/A	3e	3	41 40 05
2021-01-27 05:...	Wr	N/A	60	2	79 05
2021-01-27 05:...	Wr	N/A	3e	2	41 40
2021-01-27 05:...	Rd	N/A	3e	32	41 40 05 62 63 64 05 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 7A 78 79 30 31 32 33
2021-01-27 06:...	Wr	N/A	3e	7	41 40 01 02 03 04 05
2021-01-27 06:...	Wr	N/A	60	2	6F 09
2021-01-27 06:...	Wr	N/A	3e	2	41 40
2021-01-27 06:...	Rd	N/A	3e	32	41 40 01 02 03 04 05 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 7A 78 79 30 31 32 33

Useful Links

- E2E thread with helpful instructions
- <https://e2e.ti.com/support/power-management/f/196/t/632332?BQ28Z610-I-can-t-write-Data-Flash>
- TRM for data flash locations 15.1 data flash table
- https://www.ti.com/lit/ug/sluub63a/sluub63a.pdf?ts=1611767700105&ref_url=https%253A%252F%252Fwww.ti.com%252Fproduct%252FBQ78Z100