

## Inner-Tracker DAQ/LUMI data format

Version 1.4

Date: 2020-10-13

Word \ Bit #	Bit #																S-link 128b order (following page)	Notes	
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
0x00000000	Magic #1 (0xC3)								Ver Major (1)				Ver Minor (3)				7	3 bit major version, 5 bit minor version	
0x00000001	Error Flags				Chip Count												6		
0x00000002	Reserved																5		
0x00000003	Trig source				BX												4		Trig source: bit 0 → TCDS; bit 1 → LUMI
0x00000004	Orbit # MSBs																3		
0x00000005	Orbit # LSBs																2		
0x00000006	Reserved																1		
0x00000007	Reserved																0		
0x00000008	Chip 1 offset (in 16-bit words)(MSBs)																7		
0x00000009	Chip 1 offset (in 16-bit words)(LSBs)																6		
...	...																		
...	Chip N offset (MSBs)																		
...	Chip N offset (LSBs)																		
...	Padding to 128 bit word size																0	padding filled with '0's	
...	Magic #3 (0xE)				Res		ID?		Error flags				End bit #				7		Error flag bit 0 → LOS ; bit 1 → time-out; bit 2 – chip disabled
...	Chip 1 size (in 16-bit words)																6		
...	Chip ID (optional)																5	ID to identify chip (optional, is controlled by ID bit in header)	
...	Raw chip 1 binary data																		
...	...																		
...	Raw chip 1 binary data										Padding bits (End bit #)							Unused bits are padding with '0's	
...	...																		
...	Magic #3 (0xE)				Res		ID?		Error flags				End bit #						
...	Chip N size (in 16-bit words)																		
...	Chip ID (optional)																		
...	Raw chip N binary data																		
...	...																		
...	Raw chip N binary data						Padding bits (End bit #)												
...	Padding to 128 bit word size																	0	
...	Magic #2 (0x3C)								Reserved								7		
...	IT-DTC-Link unique ID																6		
...	Reserved																5		
...	Reserved																4		
...	Reserved																3		
...	Reserved																2		
...	Reserved																1		
END	Reserved																0		

$$\text{Max size} = 8 + 8 + ((2 + 3 + \text{MAX\_CHIP\_SIZE}) * \text{N\_CHIPS}) = 16 + (\sim 54000 * \text{N\_CHIPS})$$