Hydris PLC-Aligned Output Telegrams

High Byte v1 and Low Byte v1

Purpose: document the new additional output telegrams, explain why they were created, and provide an offset table equivalent to the default Hydris output telegram table in the manual.

Summary: The supplied High Byte and Low Byte PLC-aligned output telegrams are identical in content and field order. They differ only in endianness for multibyte numeric fields. Compared with the default Hydris industrial output telegram, the new telegrams move WATCHDOG forward to byte 6 so that the 4-byte values begin at byte 8 and remain 4-byte aligned through the numeric section.

1. Background

The Hydris manual describes the default industrial output telegram in Table 26. In that default layout, the first six status bytes are followed immediately by 4-byte floating-point values beginning at byte 6, with WATCHDOG not appearing until byte 72. That arrangement is acceptable to the instrument, but it is less convenient for PLC overlays and structured parsing because the first block of 4-byte values is not aligned on a 4-byte boundary.

The replacement telegrams supplied here preserve the same practical output information but rearrange the stream into a PLC-aligned layout. After the first six single-byte status values, WATCHDOG is placed at bytes 6-7. This intentionally causes the first 4-byte value, HC, to begin at byte 8. From there, the 4-byte fields remain cleanly aligned on 4-byte boundaries through INPUTPROCESSFLAGS.

Two versions are provided so the same logical structure can be used in either byte-order environment:

- Industrial Output Telegram PLCAligned - High Byte v1: multibyte integers, DWORDs, and floats are encoded high byte first.
- Industrial Output Telegram PLCAligned - Low Byte v1: multibyte integers, DWORDs, and floats are encoded low byte first.

2. Why These Telegrams Were Needed

Need	Explanation
Cleaner PLC data overlays	Many PLC implementations are easier to maintain when 4-byte values begin on 4-byte boundaries. The new layout makes overlay UDTs and structured parsing cleaner and less error-prone.
Consistent field map across byte orders	The High Byte and Low Byte versions use the same field sequence and the same byte offsets. Only the endianness of multibyte values changes.
Reduced ambiguity during integration	Instead of asking the PLC side to reinterpret one mixed convenience layout, the installer can choose the byte-order variant that matches the target controller or parsing convention.
Documentation match for custom deployment	The manual documents the default telegram. These replacement tables provide an equivalent reference for customers using the new PLC-aligned definitions instead.

3. Differences from the Default Hydris Output Telegram

The table below shows how the default Table 26 offsets compare with the new PLC-aligned layout. The status bytes at offsets 0-5 are unchanged. The most important

Field	Default Table 26 Offset	New Offset	Comment
CALCERR_IND	0	0	Unchanged status byte.
EQUIERR_IND	1	1	Unchanged status byte.
STATE	2	2	Unchanged status byte.
STATEDETAIL	3	3	Unchanged status byte.
TYPE	4	4	Unchanged status byte.
ERR_IND	5	5	Unchanged status byte.
WATCHDOG	72	6	Moved forward to occupy bytes 6-7 and establish 4-byte alignment for HC at byte 8.
HC	6	8	Shifted by +2 bytes because WATCHDOG now occupies bytes 6-7.
PHB	10	12	Shifted by +2 bytes.
CATHTMP_LIVE	14	16	Shifted by +2 bytes.
H	18	20	Shifted by +2 bytes.

Field	Default Table 26 Offset	New Offset	Comment
PH2	22	24	Shifted by +2 bytes.
FILTER	26	28	Shifted by +2 bytes.
IMMDEPTH	30	32	Shifted by +2 bytes.
KF	34	36	Shifted by +2 bytes.
HUMIDITY_LIVE	52	40	Shifted earlier after the aligned numeric block; note the manual prints this as HUMIDTY_LIVE, while the telegram definition uses HUMIDITY_LIVE.
PBLOW	56	44	Shifted earlier in the aligned layout.
PH2_LIVE	60	48	Shifted earlier in the aligned layout.
PVAC	64	52	Shifted earlier in the aligned layout.
VAR	68	56	Shifted earlier in the aligned layout.
INPUTPROCESSFLAGS	74	60	Shifted earlier in the aligned layout.
HN	78	64	Shifted earlier because date/time moved to the end.
PD	98	84	Shifted earlier because date/time moved to the end.
TIME	38	104	In the new telegram this is explicitly the 3-byte hhmmss field.
DATE	44	107	In the new telegram this is explicitly the 4-byte DDMMYYYY field.

4. PLC-Aligned Output Telegram Offset Table

This table is the equivalent installation reference for the new telegrams. The byte offsets are identical for both versions. Only the endianness of multibyte numeric fields changes.

Type key: B = 1-byte unsigned value, I = 2-byte unsigned integer, F = 4-byte floating-point value, D = 4-byte unsigned integer / double word, S = string, T = date/time byte series.

Start	End	Variable	High Byte	Low Byte	Size	Description	Notes
0	0	CALCERR_IND	B	B	1	Error code of the QuiK-Read measurement (Flush-B calculation).	
1	1	EQUIERR_IND	B	B	1	Error code of the Equilibrium measurement.	
2	2	STATE	B	B	1	Internal state of the instrument.	
3	3	STATEDETAIL	B	B	1	Additional information when a measurement is active. Applies when STATE is 3, 11, or 13.	
4	4	TYPE	B	B	1	Type of last started measurement.	
5	5	ERR_IND	B	B	1	Final error code of the measurement.	
6	7	WATCHDOG	I,H	I,L	2	Watchdog counter incremented every second.	Starts the aligned numeric block.
8	11	HC	F,H	F,L	4	Calculated hydrogen level result of a QuiK-Read measurement.	
12	15	PHB	F,H	F,L	4	Calculated partial pressure result of a QuiK-Read measurement.	
16	19	CATHTMP_LIVE	F,H	F,L	4	Temperature of the catharometer for each sample during a measurement.	
20	23	H	F,H	F,L	4	Hydrogen level result of an Equilibrium measurement.	
24	27	PH2	F,H	F,L	4	Partial pressure result of an Equilibrium measurement.	
28	31	FILTER	D,H	D,L	4	Filter count indicating how many measurements have been performed with the installed humidity filter on the pneumatic unit.	

Start	End	Variable	High Byte	Low Byte	Size	Description	Notes
32	35	IMMDEPTH	F,H	F,L	4	Probe immersion depth. Fixed value if fixed depth is used; evaluated value if depth is being calculated by the instrument.	
36	39	KF	F,H	F,L	4	K/f factor of the last started measurement.	
40	43	HUMIDITY_LIVE	F,H	F,L	4	Relative humidity of the carrier gas for each sample during a measurement.	Manual Table 26 prints HUMIDTY_LIVE; telegram file uses HUMIDITY_LIVE.
44	47	PBLOW	F,H	F,L	4	Blow pressure for each sample during a measurement.	
48	51	PH2_LIVE	F,H	F,L	4	Partial pressure (PH2) for each sample during a measurement.	
52	55	PVAC	F,H	F,L	4	Vacuum pressure for each sample during a measurement.	
56	59	VAR	F,H	F,L	4	Hydrogen level variation during the plateau window of the hydrogen level result (H).	
60	63	INPUTPROCESSFLAGS	D,H	D,L	4	Current progress of input-data handling using bit flags. Applies only to data received via Level2, not the UI.	
64	83	HN	S,20	S,20	20	Heat number of the last started measurement.	
84	103	PD	S,20	S,20	20	Description of the place that started the last measurement.	
104	106	TIME	T,hhmmss	T,hhmmss	3	Date and time of the last started measurement (local system time).	Local time field; 3 bytes formatted as hhmmss.
107	110	DATE	T,DDMMYYYY	T,DDMMYYYY	4	Date and time of the last started measurement (local system time).	Local date field; 4 bytes formatted as DDMMYYYY.

5. Integration Notes

• The byte offsets shown above are common to both telegram variants. Only the byte interpretation of I, F, and D fields changes between the High Byte and Low Byte files.

• Strings remain fixed-length character blocks. HN occupies bytes 64-83 and PD occupies bytes 84-103 in both variants.

- The new telegrams use separate time and date fields at the end of the payload: TIME at bytes 104-106 and DATE at bytes 107-110.
- Total telegram length is 111 bytes.