

**FLOWTI 704 MODBUS PROTOCOL
SPECIFICATION
Rev. 01.04**

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1 FLOWTI 704 modbus protocol

Flowti 704 allow the user to access configuration and archived parameter through modbus protocol. Calculator support both, ASCII and RTU version, automatically. Default baud rate of COM1 and COM2 are 9600, 8 bit, no parity. Modbus registers are divided in three section:

- registers between 0001 and 3000 are 16 bit integer register,
- registers between 3001 and 7000 are 32 bit integer register,
- registers 7001 and greater are floating point.

The following information can be accessed in each section:

- Current values: can be accessed directly reading the appropriate register as described in the register map.
- Archived data: Flowti 704 archive 2 days of measure trace, and 2 month of daily value. To select the desiderate record the user must write the requested day in the day selection register, than the archived value can be read through the appropriate register (see register map).
- Programmed data: can be accessed directly reading the appropriate register as described in the register map.
- Diagnostic code Diagnostic code is a 32 bit binary code, If a bit i set to "1" the corresponding alarm is active, otherwise the alarm is not active. The follow is the diagnostic code description:

BIT	DECIMAL VALUE	EXADECIMAL VALUE	Description
0	1	0x00000001	Power failure
1	2	0x00000002	Battery low
2	4	0x00000004	Event buffer level at 90%
3	8	0x00000008	General alarm
4	16	0x00000010	Valve closed
5	32	0x00000020	Event buffer full
6	64	0x00000040	Real time clock synchronization error
7	128	0x00000080	Configuration changed
8	256	0x00000100	Temperature out of limit
9	512	0x00000200	Pressure out of limit
10	1024	0x00000400	Measured flow rate out of limit
11	2048	0x00000800	Temperature out of range
12	4096	0x00001000	Pressure out of range
13	8192	0x00002000	Gas analyzer fault
14	16384	0x00004000	<i>Calculated data reset</i>
15	32768	0x00008000	<i>Modem error</i>
16	65536	0x00010000	<i>Low GSM level (< 10)</i>
17	131072	0x00020000	<i>Flow computer in maintenance</i>
18	262144	0x00040000	<i>Not used</i>
19	524288	0x00080000	<i>Not used</i>
20	1048576	0x00100000	<i>Analysis data error</i>
21	2097152	0x00200000	<i>Relative density error</i>
22	4194304	0x00400000	Power off
23	8388608	0x00800000	<i>Printer fault</i>
24	16777216	0x01000000	Measurement board error
25	33554432	0x02000000	Calculation error
26	67108864	0x04000000	Temperature out of threshold
27	134217728	0x08000000	Pressure out of threshold
28	268435456	0x10000000	Base flow rate out of threshold
29	536870912	0x20000000	<i>User data checksum error</i>
30	1073741824	0x40000000	<i>Program checksum error</i>
31	2147483648	0x80000000	<i>Legal data checksum error</i>

2 Register map

2.1 16 bit integer registers

	IND.	DIM.REG	RD/WR	TIPO	UM	DESCRIZIONE	
	0001	16 bit	RD/WR	16 Bit int	---	Line 1 modbus address	
	0002	16 bit	RD/WR	16 Bit int	---	Line 2 modbus address	
CURRENT VALUES	0034-0035	16 bit	RD	32 Bit int	% * 10 ⁵	In use C1	Methane
	0036-0037	16 bit	RD	32 Bit int	% * 10 ⁵	In use N2	Nitrogen
	0038-0039	16 bit	RD	32 Bit int	% * 10 ⁵	In use Co2	Carbon dioxide
	0040-0041	16 bit	RD	32 Bit int	% * 10 ⁵	In use C2	Ethane
	0042-0043	16 bit	RD	32 Bit int	% * 10 ⁵	In use C3	Propane
	0044-0045	16 bit	RD	32 Bit int	% * 10 ⁵	In use H2O	Water vapor
	0046-0047	16 bit	RD	32 Bit int	% * 10 ⁵	In use H2S	Sulfuric Hydrogen
	0048-0049	16 bit	RD	32 Bit int	% * 10 ⁵	In use H2	Hydrogen
	0050-0051	16 bit	RD	32 Bit int	% * 10 ⁵	In use CO	Carbon monoxide
	0052-0053	16 bit	RD	32 Bit int	% * 10 ⁵	In use O2	Oxygen
	0054-0055	16 bit	RD	32 Bit int	% * 10 ⁵	In use iso_C4	iso-Butane
	0056-0057	16 bit	RD	32 Bit int	% * 10 ⁵	In use n_C4	n-Butane
	0058-0059	16 bit	RD	32 Bit int	% * 10 ⁵	In use iso_C5	iso-Pentane
	0060-0061	16 bit	RD	32 Bit int	% * 10 ⁵	In use n_C5	n-Pentane
	0062-0063	16 bit	RD	32 Bit int	% * 10 ⁵	In use n_C6	n-Hexane
	0064-0065	16 bit	RD	32 Bit int	% * 10 ⁵	In use n_C7	n-Eptane
	0066-0067	16 bit	RD	32 Bit int	% * 10 ⁵	In use n_C8	n-Octane
	0068-0069	16 bit	RD	32 Bit int	% * 10 ⁵	In use n_C9	n-Nonane
	0070-0071	16 bit	RD	32 Bit int	% * 10 ⁵	In use n_C10	n-Decano
	0072-0073	16 bit	RD	32 Bit int	% * 10 ⁵	In use He	Helium
	0074-0075	16 bit	RD	32 Bit int	% * 10 ⁵	In use Ar	Argon
	0076-0077	16 bit	RD/WR	32 Bit int	bar * 10 ¹	Acquired Pc - Critical pressure	
	0078-0079	16 bit	RD/WR	32 Bit int	K * 10 ¹	Acquired Tc - Critical temperature	
	0080-0081	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired CO2	
	0082-0083	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2	
	0084-0085	16 bit	RD/WR	32 Bit int	MJ/M3 * 10 ⁵	Acquired PCS	
	0086-0087	16 bit	RD/WR	32 Bit int	--- * 10 ⁵	Acquired Relative density	
	0088-0089	16 bit	RD	32 Bit int	Bar * 10 ¹	In use Pc - Critical pressure	
	0090-0091	16 bit	RD	32 Bit int	K * 10 ¹	In use Tc - Critical temperature	
	0092-0093	16 bit	RD	32 Bit int	% * 10 ⁵	In use CO2	
	0094-0095	16 bit	RD	32 Bit int	% * 10 ⁵	In use H2	
	0096-0097	16 bit	RD	32 Bit int	MJ/M3 * 10 ⁵	In use PCS	
	0098-0099	16 bit	RD	32 Bit int	--- * 10 ⁵	In use Relative density	
0100-0101	16 bit	RD	32 Bit int	m3/h * 10 ⁰	Q1 Flow rate (Qb_min-Qb)		
0102-0103	16 bit	RD	32 Bit int	m3/h * 10 ⁰	Q2 Flow rate (Qb- Qb_max)		
0104-0105	16 bit	RD	32 Bit Int	m3/h * 10 ⁰	Base flow rate		
0106-0107	16 bit	RD	32 Bit Int	m3/h * 10 ⁰	Conventional flow rate		
0108-0109	16 bit	RD	32 Bit Int	mJ/h * 10 ⁰	Energy flow rate		
0110-0111	16 bit	RD	32 Bit Int	bar * 10 ³	Measured pressure		
0112-0113	16 bit	RD	32 Bit Int	K * 10 ²	Measured temperature		
0114-0115	16 bit	RD	32 Bit Int	mbar * 10 ²	Measured DP		
0116-0117	16 bit	RD	32 Bit Int	--- * 10 ⁵	Zb/Z1 ratio		
0118-0119	16 bit	RD	32 Bit Int	--- * 10 ⁵	Zb (Z at base condition)		
0120-0121	16 bit	RD	32 Bit Int	--- * 10 ⁵	Z1 (Z at measured condition)		
0122-0123	16 bit	RD	32 Bit Int	--- * 10 ⁵	Alfa coefficient		
0124-0125	16 bit	RD	32 Bit Int	--- * 10 ⁵	Discharge coefficient		
0126-0127	16 bit	RD	32 Bit Int	--- * 10 ⁵	Expansion factor		
0128-0129	16 bit	RD	32 Bit Int	m3 * 10 ⁰	V1 Volume (Qb_min - Qb) in the last 15 minutes		

0130-0131	16 bit	RD	32 Bit Int	$m3 * 10^0$	V2 Volume (Qb - Qb_max) in the last 15 minutes
0132-0133	16 bit	RD	32 Bit Int	$m3 * 10^0$	Base volume counter in the last 15 minute
0134-0135	16 bit	RD	32 Bit Int	$GJ * 10^0$	Energy counter in the last 15 minutes
0136-0137	16 bit	RD	32 Bit Int	$m3 * 10^0$	Hourly V1 Volume (Qb_min - Qb)
0138-0139	16 bit	RD	32 Bit Int	$m3 * 10^0$	Hourly V2 Volume (Qb - Qb_max)
0140-0141	16 bit	RD	32 bit Int	$m3 * 10^0$	Hourly Base volume
0142-0143	16 bit	RD	32 bit Int	$GJ * 10^0$	Hourly Energy counter
0144-0145	16 bit	RD	32 Bit Int	$m3 * 10^0$	Daily V1 Volume (Qb_min - Qb)
0146-0147	16 bit	RD	32 Bit Int	$m3 * 10^0$	Daily V2 Volume (Qb - Qb_max)
0148-0149	16 bit	RD	32 Bit Int	$m3 * 10^0$	Daily Base volume
0150-0151	16 bit	RD	32 Bit Int	$GJ * 10^0$	Daily Energy counter
0152-0153	16 bit	RD	32 Bit Int	$m3 * 10^0$	Monthly V1 Volume (Qb_min - Qb)
0154-0155	16 bit	RD	32 Bit Int	$m3 * 10^0$	Monthly V2 Volume (Qb - Qb_max)
0156-0157	16 bit	RD	32 Bit Int	$m3 * 10^0$	Monthly Base volume
0158-0159	16 bit	RD	32 Bit Int	$GJ * 10^0$	Monthly Energy counter
0160-0161	16 bit	RD	32 Bit Int	$m3 * 10^0$	Total V1 Volume (Qb_min - Qb)
0162-0163	16 bit	RD	32 Bit Int	$m3 * 10^0$	Total Base volume
0164-0165	16 bit	RD	32 Bit Int	$m3 * 10^0$	Total V2 Volume (Qb - Qb_max)
0166-0167	16 bit	RD	32 Bit Int	$GJ * 10^0$	Total Energy counter
0168-0169	16 bit	RD	32 Bit Int	---	Current diagnostic
0170-0171	16 bit	RD	32 Bit Int	---	History diagnostic
0172-0173	16 bit	RD	32 Bit Int	---	Current Data (DDMMYY), included shift
0174-0175	16 bit	RD	32 Bit Int	---	Current hour (hhmmss), included shift
0176-0177	16 bit	RD	32 Bit Int	---	Remaining shift (sec)
0178-0179	16 bit	RD	32 Bit Int	$mbar * 10^2$	Low DP
0180-0181	16 bit	RD	32 Bit Int	$mbar * 10^2$	High DP
0182-0183	16 bit	RD	32 Bit Int	---	Current status

DAILY RECORD	199-200	16 bit	RD/WR	32 bit Int	---	Archive selection (DD/MM/YY)	
	201-202	16 bit	RD	32 Bit Int		Daily diagnostic	
	203-204	16 bit	RD	32 Bit Int	m3/D	Daily base volume	
	205-206	16 bit	RD	32 Bit Int	m3/D	Daily V1 Volume (Qb_min - Qb)	
	207-208					Not used	
	209-210					Not used	
	211-212					Not used	
	213-214					Not used	
	301-302	16 bit	RD	32 Bit Int			
			RD		bar x 10 ³	Hourly mean pressure (01->24)	
	347-348	16 bit	RD	32 Bit Int		<i>(hourly sample refered to gas hour)</i>	
	351-352	16 bit	RD	32 Bit Int			
			RD		K x 10 ²	Hourly mean temperature (01->24)	
	397-398	16 bit	RD	32 Bit Int		<i>(hourly sample refered to gas hour)</i>	
	401-402	16 bit	RD	32 Bit Int			
			RD			Not uset	
	447-448	16 bit	RD	32 Bit Int			
	501-502	16 bit	RD	32 Bit Int			
			RD		m3/h	Hourly mean flow rate (1->96)	
	691-692	16 bit	RD	32 Bit Int		<i>(15 minute sample refered to gas hour)</i>	
	701-702	16 bit	RD	32 Bit Int			
			RD			Not used	
	891-892	16 bit	RD	32 Bit Int			
	901-902	16 bit	RD	32 Bit Int			
			RD			Not used	
	1091-1092	16 bit	RD	32 Bit Int			
1101-1102	16 bit	RD	32 Bit Int				
		RD			Not used		
1291-1292	16 bit	RD	32 Bit Int				
1301-1302	16 bit	RD	32 Bit Int				
		RD			Not used		
1491-1492	16 bit	RD	32 Bit Int				
1501-1502	16 bit	RD	32 Bit Int				
		RD			Not used		
1691-1692	16 bit	RD	32 Bit Int				
1701-1702	16 bit	RD	32 Bit Int				
		RD			Not used		
1891-1892	16 bit	RD	32 Bit Int				
1901-1902	16 bit	RD	32 Bit Int				
		RD			Not used		
2091-2092	16 bit	RD	32 Bit Int				
PROGRAMMED DATA	2716-2717	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired C1	Methane
	2718-2719	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired N2	Nitrogen
	2720-2721	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired Co2	Carbon dioxide
	2722-2723	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired C2	Ethane
	2724-2725	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired C3	Propane
	2726-2727	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2O	Water vapor
	2728-2729	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2S	Sulfuric Hydrogen
	2730-2731	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2	Hydrogen
	2732-2733	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired CO	Carbon monoxide
	2734-2735	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired O2	Oxygen
	2736-2737	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired iso_C4	iso-Butane
	2738-2739	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C4	n-Butane
	2740-2741	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired iso_C5	iso-Pentane
	2742-2743	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C5	n-Pentane
2744-2745	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C6	n-Hexane	
2746-2747	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C7	n-Eptane	

2748-2749	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C8	n-Octane
2750-2751	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C9	n-Nonane
2752-2753	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C10	n-Decano
2754-2755	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired He	Helium
2756-2757	16 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired Ar	Argon
2758-2759	16 bit	RD	32 Bit int	% * 10 ⁵	Default C1	Methane
2760-2761	16 bit	RD	32 Bit int	% * 10 ⁵	Default N2	Nitrogen
2762-2763	16 bit	RD	32 Bit int	% * 10 ⁵	Default Co2	Carbon dioxide
2764-2765	16 bit	RD	32 Bit int	% * 10 ⁵	Default C2	Ethane
2766-2767	16 bit	RD	32 Bit int	% * 10 ⁵	Default C3	Propane
2768-2769	16 bit	RD	32 Bit int	% * 10 ⁵	Default H2O	Water vapor
2770-2771	16 bit	RD	32 Bit int	% * 10 ⁵	Default H2S	Sulfuric Hydrogen
2772-2773	16 bit	RD	32 Bit int	% * 10 ⁵	Default H2	Hydrogen
2774-2775	16 bit	RD	32 Bit int	% * 10 ⁵	Default CO	Carbon monoxide
2776-2777	16 bit	RD	32 Bit int	% * 10 ⁵	Default O2	Oxygen
2778-2779	16 bit	RD	32 Bit int	% * 10 ⁵	Default iso_C4	iso-Butane
2780-2781	16 bit	RD	32 Bit int	% * 10 ⁵	Default n_C4	n-Butane
2782-2783	16 bit	RD	32 Bit int	% * 10 ⁵	Default iso_C5	iso-Pentane
2784-2785	16 bit	RD	32 Bit int	% * 10 ⁵	Default n_C5	n-Pentane
2786-2787	16 bit	RD	32 Bit int	% * 10 ⁵	Default n_C6	n-Hexane
2788-2789	16 bit	RD	32 Bit int	% * 10 ⁵	Default n_C7	n-Eptane
2790-2791	16 bit	RD	32 Bit int	% * 10 ⁵	Default n_C8	n-Octane
2792-2793	16 bit	RD	32 Bit int	% * 10 ⁵	Default n_C9	n-Nonane
2794-2795	16 bit	RD	32 Bit int	% * 10 ⁵	Default n_C10	n-Decano
2796-2797	16 bit	RD	32 Bit int	% * 10 ⁵	Default He	Helium
2798-2799	16 bit	RD	32 Bit int	% * 10 ⁵	Default Ar	Argon
2800-2801	16 bit	RD	32 Bit Int	-- *10 ⁰	Tipo di prese (0=flangia/1=angolari/2=D D/2)	
2802-2803	16 bit	RD	32 Bit Int	mm * 10 ³	Orifice diameter (d)	
2804-2805	16 bit	RD	32 Bit Int	mm * 10 ³	Pipe diameter (D)	
2806-2807	16 bit	RD	32 Bit Int	Mbar * 10 ²	DP cut off	
2808-2809	16 bit	RD	32 Bit Int	m3/h * 10 ⁰	Max. Q2 flow rate	
2810-2811	16 bit	RD	32 Bit Int	m3/h * 10 ⁰	Min. Q1 flow rate	
2812-2813	16 bit	RD	32 Bit Int	m3/h * 10 ³	Max. conventional base flow rate	
2814-2815	16 bit	RD	32 Bit Int	--- 10 * ^3	Isoentropic exponent	
2816-2817	16 bit	RD	32 Bit Int	uPa * sec	Dinamic viscosity	
2818-2819	16 bit	RD	32 Bit Int	bar * 10 ³	Low DP transducer at 4 mA	
2820-2821	16 bit	RD	32 Bit Int	bar * 10 ³	Low DP transducer at 20 mA	
2822-2823	16 bit	RD	32 Bit Int	bar * 10 ³	High DP transducer at 4 mA	
2824-2825	16 bit	RD	32 Bit Int	bar * 10 ³	High DP transducer at 20 mA	
2826-2827	16 bit	RD	32 Bit Int	--- 10 ⁰	P. transducer type	
2828-2829	16 bit	RD	32 Bit Int	bar * 10 ³	Pressure transducer at 4 mA	
2830-2831	16 bit	RD	32 Bit Int	bar * 10 ³	Pressure transducer at 20 mA	
2832-2833	16 bit	RD	32 Bit Int	bar * 10 ³	Pressure low limit	
2834-2835	16 bit	RD	32 Bit Int	bar * 10 ³	Pressure high limit	
2836-2837	16 bit	RD	32 Bit Int	bar * 10 ³	Pressure low valid range	
2838-2839	16 bit	RD	32 Bit Int	bar * 10 ³	Pressure high valid range	
2840-2841	16 bit	RD	32 Bit Int	K * 10 ³	Temperature transducer at 4 mA	
2842-2843	16 bit	RD	32 Bit Int	K * 10 ³	Temperature transducer at 20 mA	
2844-2845	16 bit	RD	32 Bit Int	K * 10 ³	Temperature low limit	
2846-2847	16 bit	RD	32 Bit Int	K * 10 ³	Temperature high limit	
2848-2849	16 bit	RD	32 Bit Int	K * 10 ³	Temperature low valid range	
2850-2851	16 bit	RD	32 Bit Int	K * 10 ³	Temperature high valid range	
2852-2853	16 bit	RD	32 Bit Int	mbar * 10 ²	DP cut off	
2854-2854	16 bit	RD	32 Bit Int	--- * 10 ⁰	Enable cut off printout (0=disable/1=enable)	

2900-2901	16 bit	RD	32 Bit Int	---	Print interval	
2902-2903	16 bit	RD	32 Bit Int	---	End day hour	
2904-2905	16 bit	RD	32 Bit Int	---	GMT	
2906-2907	16 bit	RD	32 Bit Int	---	Daylight saving time begin	
2908-2909	16 bit	RD	32 Bit Int	---	Daylight saving time end	

2910-2911	16 bit	RD	32 Bit Int	bar * 10 ⁵	Base pressure
2912-2913	16 bit	RD	32 Bit Int	K * 10 ²	Base temperature
2914-2915	16 bit	RD	32 Bit Int	Kg/m ³ * 10 ⁵	Rho air
2916-2917	16 bit	RD	32 Bit Int	bar * 10 ⁵	Barometrical pressure
2918-2919	16 bit	RD	32 Bit Int	---	Z calculation method (0= R&K/1=ISO12213-3)
2920-2921	16 bit	RD	32 Bit Int	bar * 10 ¹	Default Pc - Critical pressure
2922-2923	16 bit	RD	32 Bit Int	K * 10 ¹	Default Tc - Critical temperature
2924-2925	16 bit	RD	32 Bit Int	% * 10 ⁵	Default CO2
2926-2927	16 bit	RD	32 Bit Int	% * 10 ⁵	Default H2
2928-2929	16 bit	RD	32 Bit Int	Kg/m ³ * 10 ⁵	Default Rho at base condition
2930-2931	16 bit	RD	32 Bit Int	MJ/M ³ * 10 ⁵	Default PCS
2932-2933	16 bit	RD	32 Bit int	--- * 10 ⁵	Default Relative density
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2.2 32 bit integer registers

	IND.	DIM.REG	RD/WR	TIPO	UM	DESCRIZIONE
CURRENT VALUES	3068	32 bit	RD	32 Bit int	% * 10 ⁵	In use C1 Methane
	3069	32 bit	RD	32 Bit int	% * 10 ⁵	In use N2 Nitrogen
	3070	32 bit	RD	32 Bit int	% * 10 ⁵	In use Co2 Carbon dioxide
	3071	32 bit	RD	32 Bit int	% * 10 ⁵	In use C2 Ethane
	3072	32 bit	RD	32 Bit int	% * 10 ⁵	In use C3 Propane
	3073	32 bit	RD	32 Bit int	% * 10 ⁵	In use H2O Water vapor
	3074	32 bit	RD	32 Bit int	% * 10 ⁵	In use H2S Sulfuric Hydrogen
	3075	32 bit	RD	32 Bit int	% * 10 ⁵	In use H2 Hydrogen
	3076	32 bit	RD	32 Bit int	% * 10 ⁵	In use CO Carbon monoxide
	3077	32 bit	RD	32 Bit int	% * 10 ⁵	In use O2 Oxygen
	3078	32 bit	RD	32 Bit int	% * 10 ⁵	In use iso_C4 iso-Butane
	3079	32 bit	RD	32 Bit int	% * 10 ⁵	In use n_C4 n-Butane
	3080	32 bit	RD	32 Bit int	% * 10 ⁵	In use iso_C5 iso-Pentane
	3081	32 bit	RD	32 Bit int	% * 10 ⁵	In use n_C5 n-Pentane
	3082	32 bit	RD	32 Bit int	% * 10 ⁵	In use n_C6 n-Hexane
	3083	32 bit	RD	32 Bit int	% * 10 ⁵	In use n_C7 n-Eptane
	3084	32 bit	RD	32 Bit int	% * 10 ⁵	In use n_C8 n-Octane
	3085	32 bit	RD	32 Bit int	% * 10 ⁵	In use n_C9 n-Nonane
	3086	32 bit	RD	32 Bit int	% * 10 ⁵	In use n_C10 n-Decano
	3087	32 bit	RD	32 Bit int	% * 10 ⁵	In use He Helium
	3088	32 bit	RD	32 Bit int	% * 10 ⁵	In use Ar Argon
	3089	32 bit	RD/WR	32 Bit int	Bar * 10 ¹	Acquired Pc - Critical pressure
	3090	32 bit	RD/WR	32 Bit int	K * 10 ¹	Acquired Tc - Critical temperature
	3091	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired CO2
	3092	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2
	3093	32 bit	RD/WR	32 Bit int	MJ/M3 * 10 ⁵	Acquired PCS
	3094	32 bit	RD/WR	32 Bit int	--- * 10 ⁵	Acquired Relative density
	3095	32 bit	RD	32 Bit int	Bar * 10 ¹	In use Pc - Critical pressure
	3096	32 bit	RD	32 Bit int	K * 10 ¹	In use Tc - Critical temperature
	3097	32 bit	RD	32 Bit int	% * 10 ⁵	In use CO2
	3098	32 bit	RD	32 Bit int	% * 10 ⁵	In use H2
3099	32 bit	RD	32 Bit int	MJ/M3 * 10 ⁵	In use PCS	
3100	32 bit	RD	32 Bit int	--- * 10 ⁵	In use Relative density	
3101	32 bit	RD	32 Bit int	m3/h * 10 ⁰	Q1 Flow rate (Qb_min-Qb)	
3102	32 bit	RD	32 Bit int	m3/h * 10 ⁰	Q2 Flow rate (Qb- Qb_max)	
3103	32 bit	RD	32 Bit Int	m3/h * 10 ⁰	Base flow rate	
3104	32 bit	RD	32 Bit Int	m3/h * 10 ⁰	Conventional flow rate	
3105	32 bit	RD	32 Bit Int	mJ/h * 10 ⁰	Energy flow rate	
3106	32 bit	RD	32 Bit Int	bar * 10 ³	Measured pressure	
3107	32 bit	RD	32 Bit Int	K * 10 ²	Measured temperature	
3108	32 bit	RD	32 Bit Int	mbar * 10 ²	Measured DP	
3109	32 bit	RD	32 Bit Int	* 10 ⁵	Zb/Z1 ration	
3110	32 bit	RD	32 Bit Int	* 10 ⁵	Zb (Z at base condition)	
3111	32 bit	RD	32 Bit Int	* 10 ⁵	Z1 (Z at measured condition)	
3112	32 bit	RD	32 Bit Int	* 10 ⁵	Alfa coefficient	
3113	32 bit	RD	32 Bit Int	* 10 ⁵	Discharge coefficient	
3114	32 bit	RD	32 Bit Int	* 10 ⁵	Expansion factor	
3115	32 bit	RD	32 Bit Int	m3 * 10 ⁰	V1 Volume (Qb_min - Qb) in the last 15 minutes	
3116	32 bit	RD	32 Bit Int	m3 * 10 ⁰	V2 Volume (Qb - Qb_max) in the last 15 minutes	
3117	32 bit	RD	32 Bit Int	m3 * 10 ⁰	Base volume counter in the last 15 minute	
3118	32 bit	RD	32 Bit Int	GJ * 10 ⁰	Energy counter in the last 15 minutes	
3119	32 bit	RD	32 Bit Int	m3 * 10 ⁰	Hourly V1 Volume (Qb_min - Qb)	
3120	32 bit	RD	32 Bit Int	m3 * 10 ⁰	Hourly V2 Volume (Qb - Qb_max)	
3121	32 bit	RD	32 bit Int	m3 * 10 ⁰	Hourly Base volume	

	32 bit	RD	32 Bit Int		Not used	
	32 bit	RD	32 Bit Int			
	32 bit	RD	32 Bit Int		Not used	
	32 bit	RD	32 Bit Int			
PROGRAMMED DATA	4758	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired C1 Methane
	4759	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired N2 Nitrogen
	4760	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired Co2 Carbon dioxide
	4761	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired C2 Ethane
	4762	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired C3 Propane
	4763	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2O Water vapor
	4764	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2S Sulfuric Hydrogen
	4765	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired H2 Hydrogen
	4766	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired CO Carbon monoxide
	4767	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired O2 Oxygen
	4768	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired iso_C4 iso-Butane
	4769	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C4 n-Butane
	4770	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired iso_C5 iso-Pentane
	4771	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C5 n-Pentane
	4772	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C6 n-Hexane
	4773	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C7 n-Eptane
	4774	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C8 n-Octane
	4775	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C9 n-Nonane
	4776	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired n_C10 n-Decano
	4777	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired He Helium
	4778	32 bit	RD/WR	32 Bit int	% * 10 ⁵	Acquired Ar Argon
	4779	32 bit	RD	32 Bit int	% * 10 ⁵	Default C1 Methane
	4780	32 bit	RD	32 Bit int	% * 10 ⁵	Default N2 Nitrogen
	4781	32 bit	RD	32 Bit int	% * 10 ⁵	Default Co2 Carbon dioxide
	4782	32 bit	RD	32 Bit int	% * 10 ⁵	Default C2 Ethane
	4783	32 bit	RD	32 Bit int	% * 10 ⁵	Default C3 Propane
	4784	32 bit	RD	32 Bit int	% * 10 ⁵	Default H2O Water vapor
	4785	32 bit	RD	32 Bit int	% * 10 ⁵	Default H2S Sulfuric Hydrogen
	4786	32 bit	RD	32 Bit int	% * 10 ⁵	Default H2 Hydrogen
	4787	32 bit	RD	32 Bit int	% * 10 ⁵	Default CO Carbon monoxide
	4788	32 bit	RD	32 Bit int	% * 10 ⁵	Default O2 Oxygen
	4789	32 bit	RD	32 Bit int	% * 10 ⁵	Default iso_C4 iso-Butane
	4790	32 bit	RD	32 Bit int	% * 10 ⁵	Default n_C4 n-Butane
	4791	32 bit	RD	32 Bit int	% * 10 ⁵	Default iso_C5 iso-Pentane
	4792	32 bit	RD	32 Bit int	% * 10 ⁵	Default n_C5 n-Pentane
	4793	32 bit	RD	32 Bit int	% * 10 ⁵	Default n_C6 n-Hexane
	4794	32 bit	RD	32 Bit int	% * 10 ⁵	Default n_C7 n-Eptane
	4795	32 bit	RD	32 Bit int	% * 10 ⁵	Default n_C8 n-Octane
	4796	32 bit	RD	32 Bit int	% * 10 ⁵	Default n_C9 n-Nonane
	4797	32 bit	RD	32 Bit int	% * 10 ⁵	Default n_C10 n-Decano
	4798	32 bit	RD	32 Bit int	% * 10 ⁵	Default He Helium
	4799	32 bit	RD	32 Bit int	% * 10 ⁵	Default Ar Argon
	4800	32 bit	RD	32 Bit Int	--	Tipo di prese (0=flangia/1=angolari/2=D D/2)
	4801	32 bit	RD	32 Bit Int	mm * 10 ³	Orifice diameter (d)
	4802	32 bit	RD	32 Bit Int	mm * 10 ³	Pipe diameter (D)
	4803	32 bit	RD	32 Bit Int	mbar * 10 ²	DP cut off
	4804	32 bit	RD	32 Bit Int	m3/h * 10 ⁰	Max. Q2 flow rate
	4805	32 bit	RD	32 Bit Int	m3/h * 10 ⁰	Min. Q1 flow rate
4806	32 bit	RD	32 Bit Int	m3/h * 10 ⁰	Max. conventional base flow rate	
4807	32 bit	RD	32 Bit Int	--- * 10 ³	Isoentropic exponent	
4808	32 bit	RD	32 Bit Int	uPa*sec* 10 ²	Dinamic viscosity	
4809	32 bit	RD	32 Bit Int	mbar * 10 ³	Low DP transducer at 4 mA	
4810	32 bit	RD	32 Bit Int	mbar * 10 ³	Low DP transducer at 20 mA	
4811	32 bit	RD	32 Bit Int	mbar * 10 ³	High DP transducer at 4 mA	

4812	32 bit	RD	32 Bit Int	mbar * 10 ³	High DP transducer at 20 mA
4813	32 bit	RD	32 Bit Int	---	P. transducer type
4814	32 bit	RD	32 Bit Int	bar * 10 ³	Pressure transducer at 4 mA
4815	32 bit	RD	32 Bit Int	bar * 10 ³	Pressure transducer at 20 mA
4816	32 bit	RD	32 Bit Int	bar * 10 ³	Pressure low limit
4817	32 bit	RD	32 Bit Int	bar * 10 ³	Pressure high limit
4818	32 bit	RD	32 Bit Int	bar * 10 ³	Pressure low valid range
4819	32 bit	RD	32 Bit Int	bar * 10 ³	Pressure high valid range
4820	32 bit	RD	32 Bit Int	K * 10 ³	Temperature transducer at 4 mA
4821	32 bit	RD	32 Bit Int	K * 10 ³	Temperature transducer at 20 mA
4822	32 bit	RD	32 Bit Int	K * 10 ³	Temperature low limit
4823	32 bit	RD	32 Bit Int	K * 10 ³	Temperature high limit
4824	32 bit	RD	32 Bit Int	K * 10 ³	Temperature low valid range
4825	32 bit	RD	32 Bit Int	K * 10 ³	Temperature high valid range
4826	32 bit	RD	32 Bit Int	mbar * 10 ²	DP cut off
4827	32 bit	RD	32 Bit Int	---	Enable cut off printout (0=disable/1=enable)

5000	32 bit	RD	32 Bit Int	---	Print interval
5001	32 bit	RD	32 Bit Int	---	End day hour
5002	32 bit	RD	32 Bit Int	---	GMT
5003	32 bit	RD	32 Bit Int	---	Daylight saving time begin
5004	32 bit	RD	32 Bit Int	---	Daylight saving time end
5005	32 bit	RD	32 Bit Int	bar * 10 ⁵	Base pressure
5006	32 bit	RD	32 Bit Int	K * 10 ²	Base temperature
5007	32 bit	RD	32 Bit Int	bar * 10 ⁵	Rho air
5008	32 bit	RD	32 Bit Int	Bar * 10 ⁵	Barometrical pressure
5009	32 bit	RD	32 Bit Int	---	Z calculation method (0= R&K/1=ISO12213-3)
5010	32 bit	RD	32 Bit Int	Bar * 10 ¹	Default Pc - Critical pressure
5011	32 bit	RD	32 Bit Int	K * 10 ¹	Default Tc - Critical temperature
5012	32 bit	RD	32 Bit Int	% * 10 ⁵	Default CO2
5013	32 bit	RD	32 Bit Int	% * 10 ⁵	Default H2
5014	32 bit	RD	32 Bit Int	Kg/m3 * 10 ⁵	Default Base rho
5015	32 bit	RD	32 Bit Int	MJ/M3 * 10 ⁵	Default PCS
5015	32 bit	RD	32 Bit Int	--- * 10 ⁵	Default Specific gravity

2.3 32 bit floating point registers

	IND.	DIM.REG	RD/WR	TIPO	UM	DESCRIZIONE
	7068	32 bit	RD	32 bit float	%	In use C1 Methane
	7069	32 bit	RD	32 bit float	%	In use N2 Nitrogen
	7070	32 bit	RD	32 bit float	%	In use Co2 Carbon dioxide
	7071	32 bit	RD	32 bit float	%	In use C2 Ethane
	7072	32 bit	RD	32 bit float	%	In use C3 Propane
	7073	32 bit	RD	32 bit float	%	In use H2O Water vapor
	7074	32 bit	RD	32 bit float	%	In use H2S Sulfuric Hydrogen
	7075	32 bit	RD	32 bit float	%	In use H2 Hydrogen
	7076	32 bit	RD	32 bit float	%	In use CO Carbon monoxide
	7077	32 bit	RD	32 bit float	%	In use O2 Oxygen
	7078	32 bit	RD	32 bit float	%	In use iso_C4 iso-Butane
	7079	32 bit	RD	32 bit float	%	In use n_C4 n-Butane
	7080	32 bit	RD	32 bit float	%	In use iso_C5 iso-Pentane
	7081	32 bit	RD	32 bit float	%	In use n_C5 n-Pentane
	7082	32 bit	RD	32 bit float	%	In use n_C6 n-Hexane
	7083	32 bit	RD	32 bit float	%	In use n_C7 n-Eptane
	7084	32 bit	RD	32 bit float	%	In use n_C8 n-Octane
	7085	32 bit	RD	32 bit float	%	In use n_C9 n-Nonane
	7086	32 bit	RD	32 bit float	%	In use n_C10 n-Decano
	7087	32 bit	RD	32 bit float	%	In use He Helium
	7088	32 bit	RD	32 bit float	%	In use Ar Argon
	7089	32 bit	RD/WR	32 bit float	Bar	Acquired Pc - Critical pressure
	7090	32 bit	RD/WR	32 bit float	K	Acquired Tc - Critical temperature
	7091	32 bit	RD/WR	32 bit float	%	Acquired CO2
	7092	32 bit	RD/WR	32 bit float	%	Acquired H2
	7093	32 bit	RD/WR	32 bit float	MJ/M3	Acquired PCS
	7094	32 bit	RD/WR	32 bit float	---	Acquired Relative density
	7095	32 bit	RD	32 bit float	Bar	In use Pc - Critical pressure
	7096	32 bit	RD	32 bit float	K	In use Tc - Critical temperature
	7097	32 bit	RD	32 bit float	%	In use CO2
	7098	32 bit	RD	32 bit float	%	In use H2
	7099	32 bit	RD	32 bit float	MJ/M3	In use PCS
	7100	32 bit	RD	32 bit float	---	In use Relative density
	7101	32 bit	RD	32 bit float	m3/h	Q1 Flow rate (Qb_min-Qb)
	7102	32 bit	RD	32 bit float	m3/h	Q2 Flow rate (Qb- Qb_max)
	7103	32 bit	RD	32 bit float	m3/h	Base flow rate
	7104	32 bit	RD	32 bit float	m3/h	Conventional flow rate
	7105	32 bit	RD	32 bit float	mJ/h	Energy flow rate
	7106	32 bit	RD	32 bit float	Bar	Measured pressure
	7107	32 bit	RD	32 bit float	K	Measured temperature
	7108	32 bit	RD	32 bit float	mbar	Measured DP
	7109	32 bit	RD	32 bit float	---	Zb/Z1 ration
	7110	32 bit	RD	32 bit float	---	Zb (Z at base condition)
	7111	32 bit	RD	32 bit float	---	Z1 (Z at measured condition)
	7112	32 bit	RD	32 bit float	---	Alfa coefficient
	7113	32 bit	RD	32 bit float	---	Discharge coefficient
	7114	32 bit	RD	32 bit float	---	Expansion factor
	7115	32 bit	RD	32 bit float	m3	V1 Volume (Qb_min - Qb) in the last 15 minutes
	7116	32 bit	RD	32 bit float	m3	V2 Volume (Qb - Qb_max) in the last 15 minutes
	7117	32 bit	RD	32 bit float	m3	Base volume counter in the last 15 minute
	7118	32 bit	RD	32 bit float	GJ	Energy counter in the last 15 minutes
	7119	32 bit	RD	32 bit float	m3	Hourly V1 Volume (Qb_min - Qb)
	7120	32 bit	RD	32 bit float	m3	Hourly V2 Volume (Qb - Qb_max)
	7121	32 bit	RD	32 bit float	m3	Hourly Base volume
	7122	32 bit	RD	32 bit float	GJ	Hourly Energy counter

CURRENT VALUES

8759	32 bit	RD/WR	32 bit float	%	Acquired N2	Nitrogen
8760	32 bit	RD/WR	32 bit float	%	Acquired Co2	Carbon dioxide
8761	32 bit	RD/WR	32 bit float	%	Acquired C2	Ethane
8762	32 bit	RD/WR	32 bit float	%	Acquired C3	Propane
8763	32 bit	RD/WR	32 bit float	%	Acquired H2O	Water vapor
8764	32 bit	RD/WR	32 bit float	%	Acquired H2S	Sulfuric Hydrogen
8765	32 bit	RD/WR	32 bit float	%	Acquired H2	Hydrogen
8766	32 bit	RD/WR	32 bit float	%	Acquired CO	Carbon monoxide
8767	32 bit	RD/WR	32 bit float	%	Acquired O2	Oxygen
8768	32 bit	RD/WR	32 bit float	%	Acquired iso_C4	iso-Butane
8769	32 bit	RD/WR	32 bit float	%	Acquired n_C4	n-Butane
8770	32 bit	RD/WR	32 bit float	%	Acquired iso_C5	iso-Pentane
8771	32 bit	RD/WR	32 bit float	%	Acquired n_C5	n-Pentane
8772	32 bit	RD/WR	32 bit float	%	Acquired n_C6	n-Hexane
8773	32 bit	RD/WR	32 bit float	%	Acquired n_C7	n-Eptane
8774	32 bit	RD/WR	32 bit float	%	Acquired n_C8	n-Octane
8775	32 bit	RD/WR	32 bit float	%	Acquired n_C9	n-Nonane
8776	32 bit	RD/WR	32 bit float	%	Acquired n_C10	n-Decano
8777	32 bit	RD/WR	32 bit float	%	Acquired He	Helium
8778	32 bit	RD/WR	32 bit float	%	Acquired Ar	Argon
8779	32 bit	RD	32 bit float	%	Default C1	Methane
8780	32 bit	RD	32 bit float	%	Default N2	Nitrogen
8781	32 bit	RD	32 bit float	%	Default Co2	Carbon dioxide
8782	32 bit	RD	32 bit float	%	Default C2	Ethane
8783	32 bit	RD	32 bit float	%	Default C3	Propane
8784	32 bit	RD	32 bit float	%	Default H2O	Water vapor
8785	32 bit	RD	32 bit float	%	Default H2S	Sulfuric Hydrogen
8786	32 bit	RD	32 bit float	%	Default H2	Hydrogen
8787	32 bit	RD	32 bit float	%	Default CO	Carbon monoxide
8788	32 bit	RD	32 bit float	%	Default O2	Oxygen
8789	32 bit	RD	32 bit float	%	Default iso_C4	iso-Butane
8790	32 bit	RD	32 bit float	%	Default n_C4	n-Butane
8791	32 bit	RD	32 bit float	%	Default iso_C5	iso-Pentane
8792	32 bit	RD	32 bit float	%	Default n_C5	n-Pentane
8793	32 bit	RD	32 bit float	%	Default n_C6	n-Hexane
8794	32 bit	RD	32 bit float	%	Default n_C7	n-Eptane
8795	32 bit	RD	32 bit float	%	Default n_C8	n-Octane
8796	32 bit	RD	32 bit float	%	Default n_C9	n-Nonane
8797	32 bit	RD	32 bit float	%	Default n_C10	n-Decano
8798	32 bit	RD	32 bit float	%	Default He	Helium
8799	32 bit	RD	32 bit float	%	Default Ar	Argon
8800	32 bit	RD	32 bit float	1m3=p.	Tipo di prese (0=flangia/1=angolari/2=D D/2)	
8801	32 bit	RD	32 bit float	mm	Orifice diameter (d)	
8802	32 bit	RD	32 bit float	mm	Pipe diameter (D)	
8803	32 bit	RD	32 bit float	Mbar	DP cut off	
8804	32 bit	RD	32 bit float	m3/h	Max. Q2 flow rate	
8805	32 bit	RD	32 bit float	m3/h	Min. Q1 flow rate	
8806	32 bit	RD	32 bit float	m3/h	Max. conventional base flow rate	
8807	32 bit	RD	32 bit float	---	Isoentropic exponent	
8808	32 bit	RD	32 bit float	uPa * sec	Dinamic viscosity	
8809	32 bit	RD	32 bit float	bar	Low DP transducer at 4 mA	
8810	32 bit	RD	32 bit float	bar	Low DP transducer at 20 mA	
8811	32 bit	RD	32 bit float	bar	High DP transducer at 4 mA	
8812	32 bit	RD	32 bit float	bar	High DP transducer at 20 mA	
8813	32 bit	RD	32 bit float	---	P. transducer type	
8814	32 bit	RD	32 bit float	bar	Pressure transducer at 4 mA	
8815	32 bit	RD	32 bit float	bar	Pressure transducer at 20 mA	
8816	32 bit	RD	32 bit float	bar	Pressure low limit	
8817	32 bit	RD	32 bit float	bar	Pressure high limit	
8818	32 bit	RD	32 bit float	bar	Pressure low valid range	
8819	32 bit	RD	32 bit float	bar	Pressure high valid range	

8820	32 bit	RD	32 bit float	K	Temperature transducer at 4 mA
8821	32 bit	RD	32 bit float	K	Temperature transducer at 20 mA
8822	32 bit	RD	32 bit float	K	Temperature low limit
8823	32 bit	RD	32 bit float	K	Temperature high limit
8824	32 bit	RD	32 bit float	K	Temperature low valid range
8825	32 bit	RD	32 bit float	K	Temperature high valid range
8826	32 bit	RD	32 bit float	mbar	DP cut off
8827	32 bit	RD	32 bit float	---	Enable cut off printout (0=disable/1=enable)

9000	32 bit	RD	32 bit float	---	Print interval
9001	32 bit	RD	32 bit float	---	End day hour
9002	32 bit	RD	32 bit float	---	GMT
9003	32 bit	RD	32 bit float	---	Daylight saving time begin
9004	32 bit	RD	32 bit float	---	Daylight saving time end
9005	32 bit	RD	32 bit float	bar	Base pressure
9006	32 bit	RD	32 bit float	Bar	Base temperature
9007	32 bit	RD	32 bit float	bar	Rho air
9008	32 bit	RD	32 bit float	bar	Barometrical pressure
9009	32 bit	RD	32 bit float	---	Z calculation method (0= R&K/1=ISO12213-3)
9010	32 bit	RD	32 bit float	Bar	Default Pc - Critical pressure
9011	32 bit	RD	32 bit float	K	Default Tc - Critical temperature
9012	32 bit	RD	32 bit float	%	Default CO2
9013	32 bit	RD	32 bit float	%	Default H2
9014	32 bit	RD	32 bit float	Kg/m3	Default Base rho
9015	32 bit	RD	32 bit float	MJ/M3	Default PCS
9016	32 bit	RD	32 bit float	---	Default Specific gravity
