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Technical Note

TERPS RPS8000

DEFAULT EEPROM FORMAT

TN1504

Contents

1. Introduction

Describes the default format for the data in the EEPROM of the RPS8000 series product.
This document will provide a basis for adding the EEPROM data format to the relevant E-drawings.

2.Address Locations

Address		Size	Field Name	Contents	Format
(Dec)	(Hex)	(Bytes)		(Default)	
0	0000	1	Data field format code	1	8 bit Integer
2	0002	4	Serial Number		32-bit Integer
8	0008	16	Product ID Code	RPS8000	ASCII Text
40	0028	2	Transducer Type Identifier	&h 1F40	16 bit Integer
44	002C	1	Day of calibration - dd		8 bit Integer
45	002D	1	Month of calibration - mm		8 bit Integer
46	002E	1	Year of calibration - yy		8 bit Integer
52	0034	4	Customer Offset term	0	32 bit IEEE
56	0038	4	Customer Gain term	1	32 bit IEEE
64	0040	4	Upper pressure range		32 bit IEEE
68	0044	4	Lower pressure range		32 bit IEEE
72	0048	1	Pressure units code		8 bit Integer
73	0049	1	Sensor type Abs/Gauge	0 / 1	8 bit Integer
80	0050	1	Number of pressure coefficients		8 bit Integer
81	0051	1	Number of temperature coefficients		8 bit Integer
128	0080	4	X - Frequency datum		32 bit IEEE
132	0084	4	Y - Temperature datum		32 bit IEEE

2.Address Locations (Continued)

Address		Size	Field Name	Contents	Format
(Dec)	(Hex)	(Bytes)		(Default)	
136	0088	4	K00		32 bit IEEE
140	008C	4	K01		32 bit IEEE
144	0090	4	K02		32 bit IEEE
148	0094	4	K03		32 bit IEEE
152	0098	4	K04		32 bit IEEE
156	009C	4	K10		32 bit IEEE
160	00A0	4	K11		32 bit IEEE
164	00A4	4	K12 (1st Order Freq, 2nd order Diode)		32 bit IEEE
168	00A8	4	K13		32 bit IEEE
172	00AC	4	K14		32 bit IEEE
176	00B0	4	K20		32 bit IEEE
180	00B4	4	K21		32 bit IEEE
184	00B8	4	K22		32 bit IEEE
188	00BC	4	K23		32 bit IEEE
192	00C0	4	K24		32 bit IEEE
196	00C4	4	K30		32 bit IEEE
200	00C8	4	K31		32 bit IEEE
204	00CC	4	K32		32 bit IEEE
208	00D0	4	K33		32 bit IEEE
212	00D4	4	K34		32 bit IEEE
216	00D8	4	K40		32 bit IEEE
220	00DC	4	K41		32 bit IEEE
224	00E0	4	K42		32 bit IEEE
228	00E4	4	K43		32 bit IEEE
232	00E8	4	K44		32 bit IEEE
236	00EC	4	K50		32 bit IEEE
240	00F0	4	K51		32 bit IEEE
244	00F4	4	K52		32 bit IEEE
248	00F8	4	K53		32 bit IEEE
252	00FC	4	K54		32 bit IEEE
510	01FE	2	Check sum		16 bit Integer

3.Number Formats

Number	Description
8 bit Integer	signed integer
16 bit Integer	signed integer, MSB in lowest address
32 bit Integer	signed integer, MSB in lowest address
ASCII Text	Series of ASCII characters
32 bit IEEE	4 byte IEEE-754 floating point number lowest address holds sign & exponent highest address holds LSB of mantissa

4.Check Sum

Location 510 dec, 01FE Hex
16-bit Addition of all data between location 0 and location 511 dec (01FF Hex) will sum to 1234 hex
All un-used locations within this range are filled with zero
Locations above 511 dec (01FF Hex) are un-defined

5.Units

Frequency is expressed in Hz
Diode voltage is expressed in mV
Will give a output pressure expressed in customer units, defined in 72 dec (0048 hex)

Pressure Units	
Code	**Unit**
0	Not defined
1	mBar
2	Bar
3	hPa
4	KPa
5	MPa
6	psi
7	mm H_2O

Pressure Units	
Code	**Unit**
8	in H_2O
9	ft H_2O
10	m H_2O
11	mm Hg
12	in Hg
13	Kgf / cm^2
14	Atm

6.Notes and Comments

6.1 Data field format code
This number indicates the format for the data which follows. Any form, fit or function change to the data format should increment this number, there-by allowing older and newer sensors to be read electronically.

6.2 Product code
Product code field will be RPS8000, it is not intended to be the full product part number.

6.3 Customer gain and offset term
The customer may optionally write a value in this location to act as a scaling or tare function in their specific application.

6.4 Upper and lower pressure range
The value for pressure range in the customers units.

If not specified, the lower pressure range will be recorded as zero.

6.5 Pressure units
An integer value representing the pressure units as per above list.

So, for example the value 6 = psi

Pressure units apply to both the upper/lower pressure range fields and the output of the polynomial equation.

6.6 Sensor type (Abs / Gauge)
An integer indicating absolute or gauge sensor. A zero represents absolute, a one represents a gauge sensor.

6.7 Number of pressure coefficients
The number of coefficients for pressure, so a curve fit which is third order in pressure will have four coefficients for pressure K0y, K1y, K2y and K3y, and the value 4 will be stored here.

6.8 Number of temperature coefficients
The number of coefficients in the temperature fit, so a curve fit which is second order in temperature will have three coefficients Kx0, Kx1 and Kx2.

6.9 X - Frequency datum
The datum point for the frequency, this value should be subtracted from the measured frequency (in Hz) before it is used in the polynomial equation.

6.10 Y - Temperature datum
The datum point for the diode. This value should be subtracted from the measured diode (in mV) before it is used in the polynomial equation.

6.11 Polynomial Coefficients
The value of the polynomial coefficients for temperature (diode) and pressure (frequency).

Un-used coefficients will have the 4 byte IEEE value for zero stored in their location.

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