
HCS362 Data Sheet Errata

Clarifications/Corrections to the Data Sheet:

In the Device Data Sheet (DS40189D), the following clarifications and corrections should be noted.

1. Module: Low Voltage Detector

In Section 2.1.3, Low Voltage Detector, page 6, typical levels have been adjusted to more accurately reflect actual device performance. MPLAB® 5.70.40 and higher will match these modified typical values.

2.1.3 LOW VOLTAGE DETECTOR

A low battery voltage detector onboard the HCS362 can indicate when the operating voltage drops below a predetermined value. There are eight options available depending on the $V_{LOW}[0..2]$ configuration options. The options provided are:

000 - 2.15V	100 - 4.20V
001 - 2.25V	101 - 4.40V
010 - 2.35V	110 - 4.60V
011 - 2.45V	111 - 4.80V

HCS362

TABLE 1: CONFIG_0

Bit Address	Field	Description	Values
0	OSC_0	Oscillator adjust	0000 - nominal 1000 - fastest 0111 - slowest
1	OSC_1		
2	OSC_2		
3	OSC_3		
4	VLOW_0	VLOW select	nominal values 000 - 2.15V 100 - 4.20V 001 - 2.25V 101 - 4.40V 010 - 2.35V 110 - 4.60V 011 - 2.45V 111 - 4.80V
5	VLOW_1		
6	VLOW_2		
7	BSEL_0	Bitrate select	00 - T _E = 100 μs 01 - T _E = 200 μs 02 - T _E = 400 μs 03 - T _E = 800 μs
8	BSEL_1		
9	MTX_0	Minimum number of code words	00 - 1 01 - 2 10 - 4 11 - 8
10	MTX_1		
11	GUARD_0	Guard time select	00 - 0 ms (1 T _E) 01 - 6.4 ms + 2 T _E 10 - 25.6 ms + 2 T _E 11 - 76.8 ms + 2 T _E
12	GUARD_1		
13	TIMOUT_0		00 - No Timeout 01 - 0.8 s to 0.8 s + 1 code word 10 - 3.2 s to 3.2 s + 1 code word 11 - 25.6 s to 25.6 s + 1 code word
14	TIMOUT_1		
15	CTSEL	CTSEL	0 = TIME bits 1 = CRC bits

2. Module: Transmission Modulation Format

Corrections to Figure 3-3 and 3-4, page 9. Clock count should be 12 not 16, and 31 TE preamble should be 23 TE preamble.

Corrections to Figure 3-5, page 11. The CTSEL bit values should be changed as follows:

- XSER = 0, CTSEL = 0 to CTSEL = 1
- XSER = 1, CTSEL = 0 to CTSEL = 1
- XSER = 0, CTSEL = 1 to CTSEL = 0
- XSER = 1, CTSEL = 1 to CTSEL = 0

FIGURE 3-3: TRANSMISSION FORMAT (PWM)

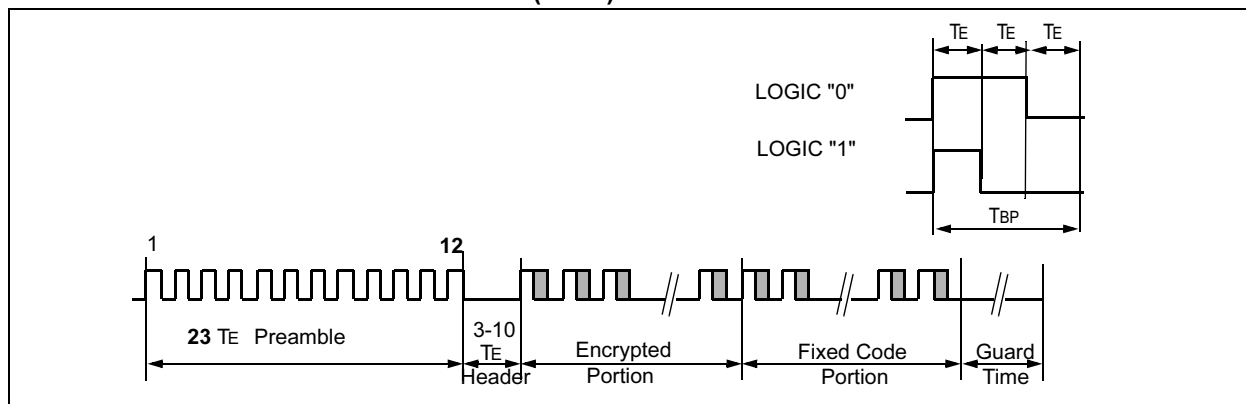


FIGURE 3-4: TRANSMISSION FORMAT (MANCHESTER)

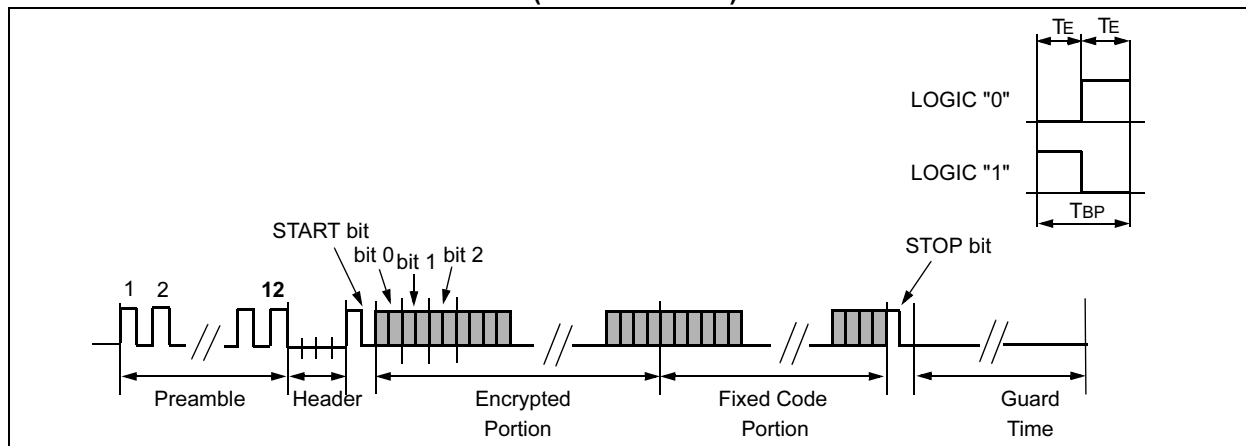
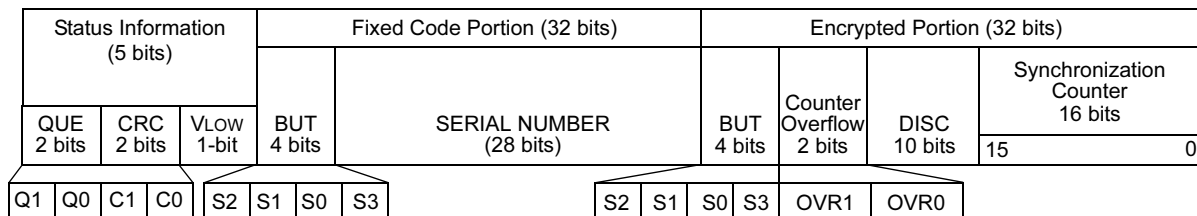
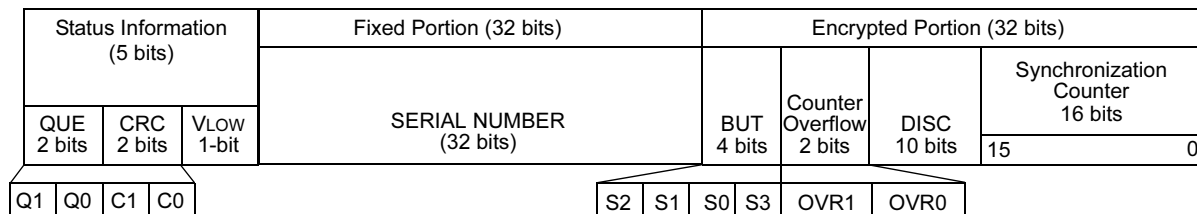


FIGURE 3-5: CODE WORD DATA FORMAT CONFIGURATION WORDS

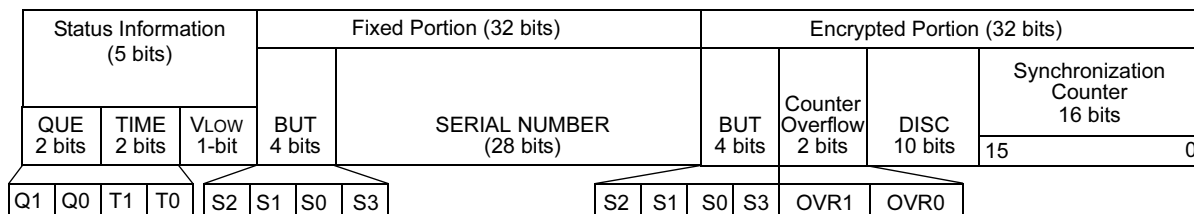
With XSER = 0, CTSEL = 1



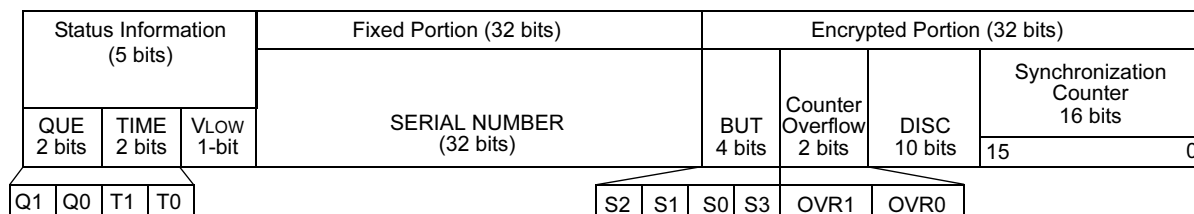
With XSER = 1, CTSEL = 1



With XSER = 0, CTSEL = 0



With XSER = 1, CTSEL = 0



Transmission Direction LSB First

3. Module: $\overline{\text{LED}}$ Output

Corrections to Figure 3-7, page 12. The duty cycle TLEDON should be 100 ms not 25 ms and TLEDOFF should be 400 ms not 500 ms.

Correction to Figure 3-8, page 12. Duty cycle TLEDOFF should be 820 ms not 800 ms.

FIGURE 3-7: LED OPERATION (LED = 1)

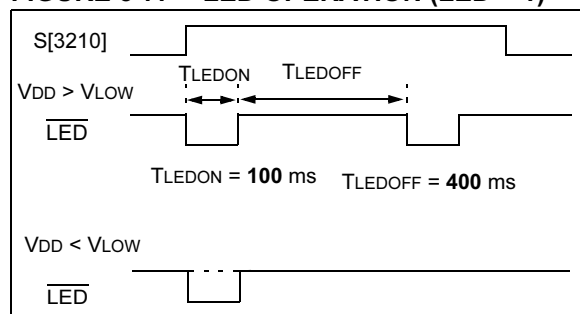
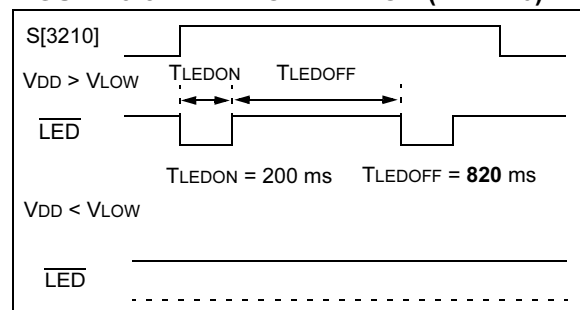


FIGURE 3-8: LED OPERATION (LED = 0)



4. Module: Configuration Words

Correction to Table 4-4, page 18. Bit 12 values should be changed as shown below:

TABLE 4-4: SEED_3

Bit Address	Field	Description	Values
0	SEED_48	Seed Most Significant word	—
1	SEED_49		
2	SEED_50		
...	...		
9	SEED_57		
10	SEED_58		
11	SEED_59		
12	LED	LED output timing	0 = VBAT>VLOW LED blink 200/820 ms VBAT<VLOW LED not blinking 1 = VBAT>VLOW LED blink 100/400 ms VBAT<VLOW LED blink once
13	MOD	Modulation Format	0 = PWM 1 = MANCHESTER
14	RFEN	RF Enable/S3 multiplexing	0 - Enabled (S3 only sensed 2 seconds after the last button is released) 1 - Disabled (S3 same as other S inputs)
15	HEADER	Header Length	0 = short Header, TH = 3 x TE 1 = standard Header, TH = 10 x TE

5. Module: Electrical Characteristics

Corrections to Figure 7-2, 7-3, 7-5 and 7-6, page 27 and 28. Clock count should be 12 not 16, and 31 TE preamble should be 23 TE preamble.

Corrections to Table 7-4 and 7-5, page 29. TP BSEL values should be 23 not 31.

FIGURE 7-2: PWM FORMAT SUMMARY (MOD=0)

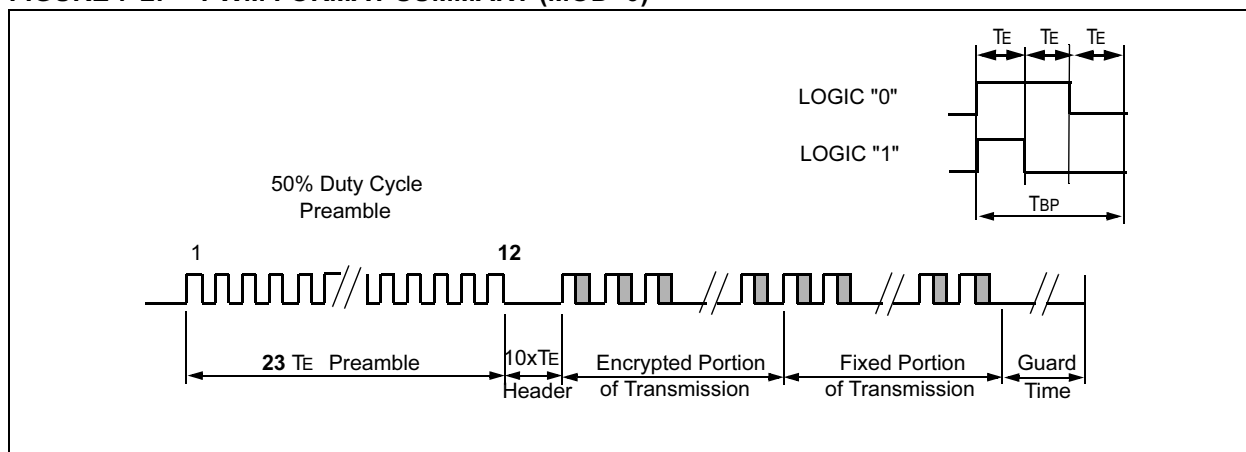


FIGURE 7-3: PWM PREAMBLE/HEADER FORMAT (MOD=0)

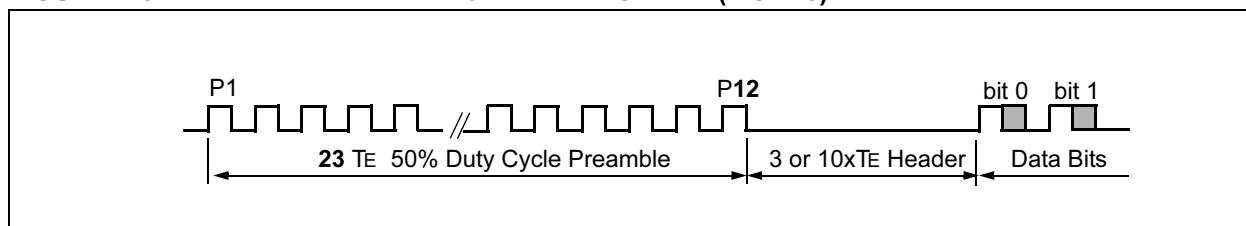


FIGURE 7-5: MANCHESTER FORMAT SUMMARY (MOD=1)

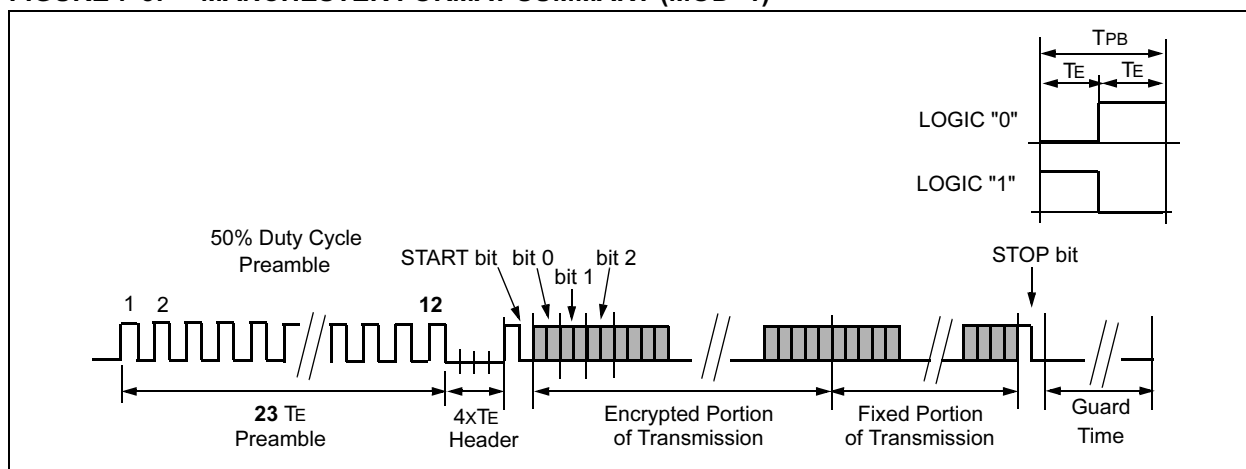


FIGURE 7-6: MANCHESTER PREAMBLE/HEADER FORMAT (MOD=1)

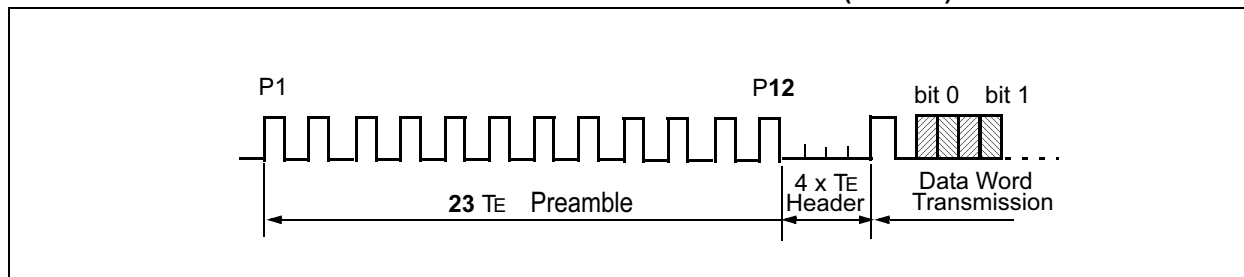


TABLE 7-4: CODE WORD TRANSMISSION TIMING PARAMETERS – PWM MODE^(1,3)

VDD = +2.0V to 6.3V Commercial (C): TAMB = 0 °C to +70 °C Industrial (I): TAMB = -40 °C to +85 °C		BSEL Value				
		11	10	01	00	
Symbol	Characteristic	Typical	Typical	Typical	Typical	Units
TE	Basic pulse element	800	400	200	100	μs
TBP	Bit width	3	3	3	3	TE
TP	Preamble duration	23	23	23	23	TE
TH	Header duration ⁽⁴⁾	10	10	10	10	TE
TC	Data duration	207	207	207	207	TE
TG	Guard time ⁽²⁾	27.2	26.4	26	25.8	ms
—	Total transmit time	220	122	74	50	ms
—	Data Rate	417	833	1667	3334	bps

- Note 1:** The timing parameters are not tested but derived from the oscillator clock.
Note 2: Assuming GUARD = 10 option selected in CONFIG_0 Configuration Word.
Note 3: Allow for a +/- 14% tolerance on the encoder internal oscillator after calibration.
Note 4: Assuming HEADER = 1 option selected in SEED_3 Configuration Word.

TABLE 7-5: CODE WORD TRANSMISSION TIMING PARAMETERS—MANCHESTER MODE^(1,3)

VDD = +2.0V to 6.3V Commercial (C): TAMB = 0 °C to +70 °C Industrial (I): TAMB = -40 °C to +85 °C		BSEL Value				
		11	10	01	00	
Symbol	Characteristic	Typical	Typical	Typical	Typical	Units
TE	Basic pulse element ⁽³⁾	800	400	200	100	μs
TBP	Bit width	2	2	2	2	TE
TP	Preamble duration	23	23	23	23	TE
TH	Header duration	4	4	4	4	TE
TC	Data duration	138	138	138	138	TE
TG	Guard time ⁽²⁾	26.8	26.4	26	25.8	ms
—	Total transmit time	166	96	61	43	ms
—	Data Rate	625	1250	2500	5000	bps

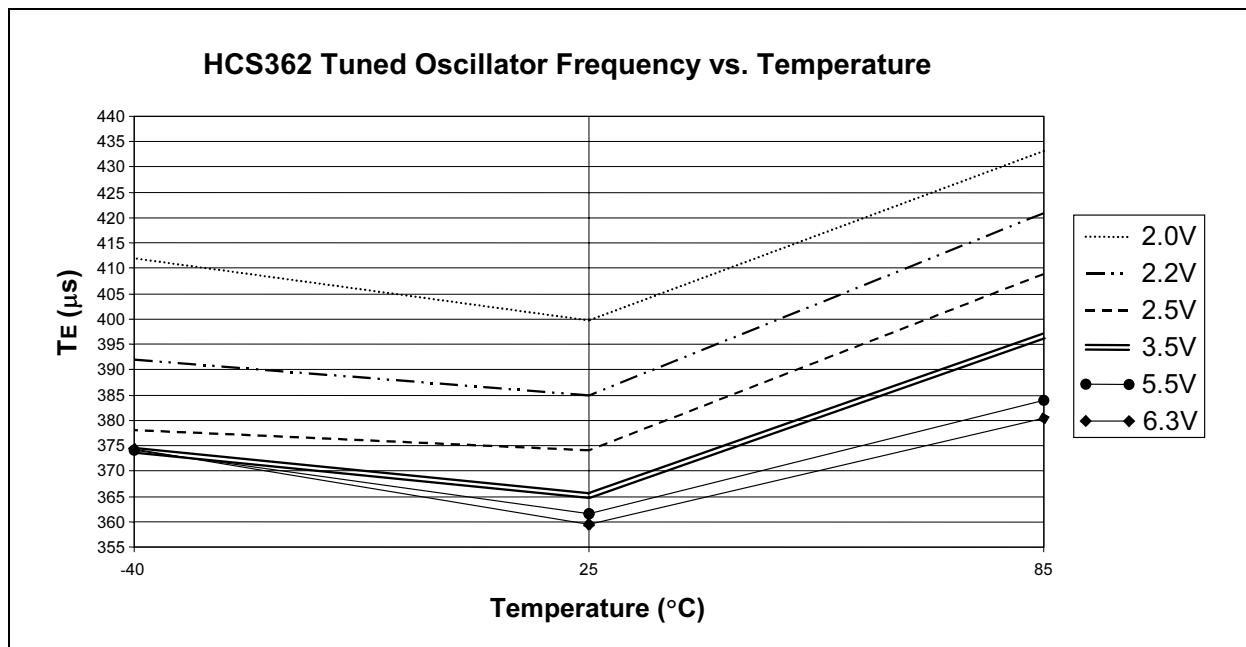
- Note 1:** The timing parameters are not tested but derived from the oscillator clock.
Note 2: Assuming GUARD = 10 option selected in CONFIG_0 Configuration Word.
Note 3: Allow for a +/- 14% tolerance on the encoder internal oscillator after calibration.

6. Module: Internal RC Oscillator

Corrections to text in Section 2.1.2 paragraph. Change " $\pm 10\%$ " to " $\pm 14\%$ " and change "(once calibrated over...3.5V - 6.3V)" to "once calibrated over a voltage range of 2V - 6.3V." The oscillator frequency varies $\pm 10\%$ (once calibrated over a voltage range of 2.2V - 3.5V).

Corrections to Figure 2-3: HCS362 Normalized TE vs. Temperature. Replace Figure 2-3 with the figure below.

FIGURE 2-3: HCS362 TE VS. TEMPERATURE



REVISION HISTORY

Rev. A Document - 8/02

Item 1 - First revision of this document

Rev. B Document - 8/02

Item 2 - Added corrections to Figures 3-3, 3-4 & 3-5.

Item 3 - Added corrections to Figures 3-7 & 3-8.

Item 4 - Added corrections to Table 4-4.

Item 5 - Added corrections to Figures 7-2, 7-3, 7-5 & 7-6 and to Tables 7-4 & 7-5.

Rev. C Document - 2/03

Item 5 -Changed In Tables 7-4 and 7-5, +/- 10% to +/- 14%.

Item 6 - Added corrections to Section 2.1.2, including text change from +/- 10% to +/- 14% and new graph.

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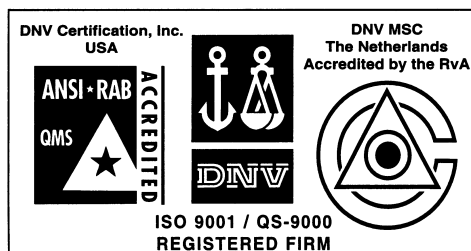
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