



701 White Avenue  
Beloit, Wisconsin 53511  
Tel: 608.364.8424  
Fax: 608.364.8283  
Ted.stevenson@fairbanksmorse.com

**ATTACHMENT  
TO  
10CFR21 FOR WOODWARD DRU  
FM ID# 06-01**

**FM Supplied DRU S/N's**

13115786	
13149152	BV-2
13149153	BV-2
13445722	
13541781	SCE&G
13541782	SCE&G
13542472	SCE&G
13542473	FERMI
13576266	SCE&G
13629594	SCE&G
14001239	BV-2
14205663	



**SERVICE BULLETIN**

**Digital Reference Unit  
CMOS PDIP Integrated Circuit—Corrosion Issue**

December 2005

01363

**Issue**

Corrosion has been detected in some CMOS PDIP integrated circuits (IC) used in Digital Reference Unit (DRU) products. The corrosion of certain IC's on the circuit board can cause the DRU to function incorrectly.

**Description**

Woodward has identified DRU's that have been returned for repair due to internal corrosion of a CMOS PDIP integrated circuit from a specific manufacturer. Failure analysis recently completed on defective components confirmed that the cause of failure was due to internal aluminum conductor corrosion resulting from delamination of the outer plastic package from the device lead frame. Although the IC manufacturer has not identified a specific failure cause, customer returns indicate a slight increase in the failure rate that began with units shipped in November 2000. Alternative manufacturer's components have been used in these applications with no reported problems.

The potential failure modes of affected units could result in the DRU not allowing speed control raise/ lower adjustment in the governor control system, or could result in a control shutdown.

**Affected Units**

Specific DRU controls with the following item numbers that shipped between November 1, 2000 and November 22, 2005, containing the suspect manufacturers/type components may be more susceptible to delamination.

Provided  
By  
FM

9903-364	9900-486	5522-047	8272-682
9903-365	9900-517	5522-059	8272-683
9903-439	9900-519		8272-684
9903-470	9900-524		8272-685

Refer to tables below for specific serial numbers. Units that are currently within the standard warranty period (as of January 1, 2006) are identified with an asterisk ( \* ) The affected date range was determined from actual field return and inventory transaction data.

**Corrective Action**

Woodward has removed the specific manufacturer as an approved vendor for the affected IC grade on all eight component part numbers that are used on the DRU.

**Customer Action**

If it is determined that a unit needs to be returned to Woodward, please select one of the following options:

- Contact your Woodward customer service representative for a return authorization number (RAN) and return the unit(s) to Woodward.
- If a return is not feasible, contact your Woodward customer service representative to discuss the availability of replacement/exchange unit(s).

Please refer to this service bulletin number when scheduling your return. Service bulletin actions will be performed at no charge for all controls that fall within the product warranty period at the time they are returned. Units outside of the standard warranty period can be quoted for replacement of the affected IC's

9900-517	13686505	9900-524	13072526	9903-365	13577893	9903-470	13263718
9900-517	13991200 *	9900-524	13072527	9903-365	13649235	9903-470	13347822
9900-517	14035012 *	9900-524	13105939	9903-365	14177284 *	9903-470	13347823
9900-517	14036408 *	9900-524	13105940	9903-365	14177285 *	9903-470	13348461
9900-517	14036409 *	9900-524	13108690	9903-365	14177286 *	9903-470	13348462
9900-517	14037963 *	9900-524	13108691	9903-365	14177469 *	9903-470	13349177
9900-517	14037964 *	9900-524	13256344	9903-365	14177470 *	9903-470	13351538
9900-517	14039704 *	9900-524	13266616	9903-365	14177471 *	9903-470	13351539
9900-517	14039705 *	9900-524	13266617	9903-365	14177472 *	9903-470	13352957
9900-517	14043933 *	9900-524	13268082	9903-365	14177473 *	9903-470	13352958
9900-517	14043934 *	9900-524	13268083	9903-365	14177474 *	9903-470	13443890
9900-517	14043935 *	9900-524	13268986	9903-365	14374699 *	9903-470	13443891
9900-517	14045202 *	9900-524	13268987	9903-365	14374700 *	9903-470	13443892
9900-517	14045203 *	9900-524	13271636	9903-365	14374701 *	9903-470	13490742
9900-517	14081382 *	9900-524	13272235	9903-365	14484581 *	9903-470	13564431
9900-517	14081383 *	9900-524	13616210	9903-439 *	13115209	9903-470	13564432
9900-517	14082820 *	9900-524	13616211	9903-439	13115786 ✓	9903-470	13564433
9900-517	14085314 *	9900-524	13617949	9903-439	13149152 ✓	9903-470	13603450
9900-517	14086748 *	9900-524	13617950	9903-439	13149153 ✓	9903-470	13671900
9900-517	14086749 *	9900-524	13620364	9903-439 *	13154486 ✓	9903-470	13684563
9900-517	14089130 *	9900-524	13620365	9903-439 *	13170657 ✓	9903-470	13684564
9900-517	14089131 *	9900-524	13625325	9903-439 *	13170658 ✓	9903-470	13709567
9900-517	14090346 *	9900-524	13630415	9903-439	13186111	9903-470	13713930
9900-517	14090347 *	9900-524	13639730	9903-439	13186112	9903-470	13713931
9900-517	14091761 *	9900-524	13967396 *	9903-439 *	13192223 ✓	9903-470	13715637
9900-517	14091762 *	9900-524	13967397 *	9903-439 *	13193853 ✓	9903-470	13715638
9900-517	14093969 *	9900-524	13967398 *	9903-439 *	13206689 ✓	9903-470	13716888
9900-517	14093970 *	9900-524	13967399 *	9903-439	13284579	9903-470	13716889
9900-517	14096259 *	9900-524	13967400 *	9903-439	13284580	9903-470	13717949
9900-517	14096260 *	9900-524	13967401 *	9903-439	13344808	9903-470	13717950
9900-517	14119910 *	9900-524	14113073 *	9903-439	13445722 ✓	9903-470	13719247
9900-517	14119911 *	9900-524	14113074 *	9903-439	13516650	9903-470	13719248
9900-517	14120965 *	9900-524	14292224 *	9903-439	13541781 ✓	9903-470	13720683
9900-517	14120966 *	9903-364	13154469	9903-439	13541782 ✓	9903-470	13720684
9900-517	14220887 *	9903-364	13155639	9903-439	13542472 ✓	9903-470	13789808
9900-517	14220888 *	9903-364	13158005	9903-439	13542473 ✓	9903-470	13789809
9900-517	14220889 *	9903-364	13161043	9903-439	13576266 ✓	9903-470	13789815
9900-517	14234705 *	9903-364	13161044	9903-439	13629594 ✓	9903-470	13789818
9900-517	14270727 *	9903-364	13280329	9903-439	13647136	9903-470	13789819
9900-517	14270728 *	9903-364	13280330	9903-439	13650148	9903-470	13861533 *
9900-517	14290601 *	9903-365	13073449	9903-439	13650149	9903-470	14071858 *
9900-517	14290602 *	9903-365	13175373	9903-439	13650150	9903-470	14071859 *
9900-517	14292225 *	9903-365	13175374	9903-439	13651337	9903-470	14071860 *
9900-517	14292226 *	9903-365	13262045	9903-439	13651338	9903-470	14073051 *
9900-517	14304130 *	9903-365	13319008	9903-439	13651339	9903-470	14073052 *
9900-517	14304131 *	9903-365	13383317	9903-439 *	13982105 ✓	9903-470	14073053 *
9900-517	14318895 *	9903-365	13383318	9903-439	14001239 *	9903-470	14081384 *
9900-517	14318896 *	9903-365	13384198	9903-439	14205663 ✓	9903-470	14081385 *
9900-517	14322884 *	9903-365	13384199	9903-470	13149512	9903-470	14081386 *
9900-517	14322885 *	9903-365	13467372	9903-470	13476736	9903-470	14146651 *
9900-517	14330595 *	9903-365	13467373	9903-470	12382054	9903-470	14146660 *
9900-517	14330597 *	9903-365	13468141	9903-470	12382055	9903-470	14151877 *
9900-517	14333886 *	9903-365	13468142	9903-470	12382056	9903-470	14209071 *
9900-517	14333887 *	9903-365	13576301	9903-470	12382057	9903-470	14209072 *
9900-517	14338769 *	9903-365	13576302	9903-470	13149513	9903-470	14212574 *
9900-524	13000971	9903-365	13577159	9903-470	13149514	9903-470	14331530 *
9900-524	13051903	9903-365	13577160	9903-470	13149515	9903-470	14366376 *
9900-524	13051904	9903-365	13577892	9903-470	13253050	9903-470	14425565 *

✓ - supplied by FM  
\* - repaired