

Error Codes for MS2000, RM2000 and TG-1000 Diagnostics

Error codes are dumped to the screen with the last error code shown first using the [DU Y command](#). The table below lists the meanings of the error codes as of this publication.

Error Number †	Error Description
0	No Error
1-9	OVERTIME - RECOVERABLE. Error caused by competing tasks using the microprocessor.
10-14	OVERSHOT - Move overshoot the target; happens frequently, not really an error.
15	NEGATIVE LOG - Negative number for Log conversion.
20-23	AXIS DEAD - FATAL. No movement for 100 cycles; axis halted.
30-33	RUN AWAY - FATAL. Getting further from the target; axis halted.
34	UPPER LIMIT - Upper Limit reached. (axis unspecific)
35	LOWER LIMIT - Lower Limit reached. (axis unspecific)
36	MOVE INTO UPPER (axis unspecific)
37	MOVE INTO LOWER (axis unspecific)
38	BACK VOLTAGE LIMIT (axis unspecific)
42	Crisp Error
43	Crisp Halted
44	Finish Speed Clamp
45	ADC_LOCK_OOR - Out-of-range error for locked servo - causes unlock.
46	ADC_FOLLOW_ERR - Error attempting to follow an analog ADC input.
47	Servo Locked
48	Task Loop Overtime
49	Low Light
50-53	ENCODER ERROR OVERFLOW - FATAL. Error term so large that move intent is indiscernible; axis halted.
54	I2C Poll Error
55	EPROM NO LOAD - Saved-settings on EPROM not loaded, compile date mismatch.
56	I2C Busy Error
57	I2C Write Error 1
58	I2C Read Error 1
59	I2C No Acknowledgement Error , followed by I2C Chip Address
60-65	ADJUST-MOVE ERROR - Failed to clear 'M' soon enough. FATAL
85	SCAN LOST PULSES - During a scan, missing pulses were detected.
86	SCAN INCOMPLETE - During a scan, terminated before completing the row.
87	TTL Report Buffer Overrun
90-94	ERROR_LARGE - RECOVERABLE. Error large. Motor set to FULL SPEED; hope to catch up.
100-104	INDEX NOT FOUND
105	Buffer Overrun
106	Buffer Underrun
110	SPIM Loop Time

Error Number †	Error Description
120-124	Encoder E Flag
140	ADEPT High Voltage low
141	ADEPT I2C Dead
142	PIEZO READ POS
143	PIEZO WRITE POS
144	PIEZO MOVE ERR
145	PIEZO READ POS1
146	PIEZO INIT
147	PIEZO POS ERROR
148	Autofocus 200um safety limit Encountered
149	I2C_BAD_BUSY ERROR
150	READ_I2C_ZERO_POT_ERR1
151	READ_I2C_ZERO_POT_ERR2
152	READ_I2C_FEEDBACK_POT_ERR1
153	READ_I2C_FEEDBACK_POT_ERR2
154	READ_I2C_ALIGNSET_ERR1
155	READ_I2C_ALIGNSET_ERR2
156	WRITE_I2C_ALIGNSET_ERR1
157	WRITE_I2C_ALIGNSET_ERR2
158	READ_BYTE_I2C_U15_ERR1
159	READ_BYTE_I2C_U15_ERR2
160	READ_BYTES_I2C_U15_ERR1
161	READ_BYTES_I2C_U15_ERR2
162	WRITE_BYTE_I2C_U15_ERR1
163	WRITE_BYTE_I2C_U15_ERR2
164	WRITE_BYTES_I2C_U15_ERR
165	WRITE_I2C_ZERO_POT_ERR1
166	WRITE_I2C_ZERO_POT_ERR2
167	WRITE_I2C_FEEDBACK_POT_ERR1
168	WRITE_I2C_FEEDBACK_POT_ERR2
169	DC_PORT_SETUP1_ERR
170	DC_PORT_SETUP2_ERR
171	DC_PORT_SETUP3_ERR
172	I2C_CALIBRATION_ERR
173	I2C_AXIS_ENABLE_ERR1
174	I2C_AXIS_ENABLE_ERR2
175	I2C_AXIS_MUTE1_ERR
176	I2C_AXIS_MUTE2_ERR
177	I2C_READ_TTL_ERR1
178	I2C_READ_PIEZO_DAC_ERR1
179	I2C_READ_PIEZO_DAC_ERR2
180	I2C_WRITE_PIEZO_DAC_ERR
181	I2C_READ_ERR2
182	MS_I2C_IDLE_ERR
183	MS_I2C_STOP_ERR

Error Number †	Error Description
184	I2C_WRITE_ERR2
185	I2C_WRITE_ERR3
186	I2C_WRITE_ERR4
187	I2C_WRITE_ERR5
188	I2C_WRITE_ERR6
189	I2C_WRITE_ERR7
190	I2C_WRITE_ERR8
191	I2C_WRITE_ERR9
192	I2C_WRITE_ERRA
193	I2C_WRITE_ERRB
194	I2C_WRITE_ERRC
195	I2C_NACK_ERR3
196	I2C_NACK_ERR4
197	I2C_READ_ERR3
198	I2C_READ_ERR4
199	I2C_READ_ERR5
200	I2C_READ_ERR6
201	I2C_READ_ERR7
202	I2C_READ_TTL_ERR2
203	I2C_NACK_ERROR
204	ERR_TTL_READ_TIMEOUT
205	ERR_TTL_MISMATCH I2C bus error.
206	I2C_WRITE_ERRD
207	I2C_WRITE_ERRE
208	I2C_READ_ERR8
209	I2C_READ_ERR9
210	I2C_WRITE_ERRF
211	I2C_WRITE_ERR10
212	I2C_WRITE_ERR11
213	I2C_WRITE_ERR12
214	I2C_WRITE_ERR13
215	I2C_WRITE_ERR14
216	I2C_WRITE_ERR15
217	READ_BYTE_I2C_U15_ERR3
218	READ_BYTE_I2C_U15_ERR4
219	READ_BYTE_I2C_U15_ERR5
220	READ_BYTE_I2C_U15_ERR6
221	I2C_BUS_ERROR_RD
222	I2C_BUS_ERROR_WR
223	I2C_WRITE_ERR16
224	I2C_WRITE_ERR17
225	RDBYTE_0
226	RDBYTE_1
227	RDBYTE_2
228	RDBYTE_3

Error Number †	Error Description
229	RDBYTE_4
230	RDBYTE_5
231	RDBYTE_6
233	RDBYTE_7
234	RDBYTE_8
235	RDBYTE_9
236	READ_I2C_ALIGNSET_ERR3
237	I2C_WRITE_INT_ERR1
238	I2C_WRITE_INT_ERR2
239	I2C_WRITE_OP_CODE_ERR1
240	I2C_WRITE_OP_CODE_ERR2
241	I2C_READ_INT_ERR1
242	I2C_READ_INT_ERR2
243	I2C_NACK_WRITING
244	LIMIT_NOT_FOUND
248	CRIFF_I2C_ERR1
249	CRIFF_I2C_ERR2
250	I2C_READ_FAIL
254	REPORT_PSD
255	WRITE_DAC_ERROR0
256	WRITE_DAC_ERROR1
257	WRITE_DAC_ERROR2
258	I2C_DIP_SWITCH_ERR0
259	I2C_DIP_SWITCH_ERR1
260	I2C_DIP_SWITCH_ERR2
261	WRITE_DAC_ERROR3
262	I2C_DIP_SWITCH_ERR3
263	WRITE_I2C_ALIGNSET_ERR3
264	LCD_STATE_ERROR
300	Autofocus Scan failed due to insufficient contrast
301	Autofocus Calibration Failed
302	Clutch Disengaged, Engage clutch to do Autofocus
305-311	Source of last Reset , Very common there will always be one preset on controller start. 305(External VDD Mon),309(Software cmd or reset button),307(Missing Clk), 306(Onboard VDD Mon)
500	TX1_OVERRUN
501	TST_ERROR0
502	TST_ERROR1
503	TST_ERROR2
504	TST_ERROR3
505	TST_ERROR4
600-604	FEEDBACK_POT0_TEST
610-614	ZERO_POT0_TEST
620-624	ALIGNSET0_TEST
630-634	ENCODER_TEST

Error Number †	Error Description
635	DIP_SWITCH_SELF_TEST
636	PIEZO_DAC_TEST
640-641	FW_DEAD_ERROR
650-651	FW_ABSENT_ERROR
665	I2C_RECOVER_SUCCESS
666	I2C_RECOVER_FAILED
65535	10 MINUTE ELAPSED TIME MARK

† Where multiple errors are listed, the last digit indicates the axis number that is in error. On three-axis units X=0, Y=1, and Z=2; on single-axis MFC units, Z=0.

FATAL errors cause the controller to halt motion on the axis that has the error. A commanded move will not be completed to the desired precision if a FATAL error occurs.

RECOVERABLE errors do not stop the controller from attempting to complete a commanded move. Large numbers of recoverable errors should be taken as a warning. Frequent servo errors (numbers 90-92) often mean that the speed is near or exceeding the stage maximum. Frequent overtime errors (numbers 1-9) often mean that competing processes, such as over-frequent serial status requests, are using too much CPU time.

[serial](#), [tech note](#), [ms2000](#), [tiger](#)

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