

Re: the kitchen stove

Source: <http://sci.tech-archive.net/Archive/sci.electronics.repair/2007-06/msg00783.html>

- *From:* m kinsler <kinsler33@xxxxxxxxxxxx>
 - *Date:* Sat, 16 Jun 2007 05:39:21 -0000
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On Jun 13, 11:16 pm, m kinsler <kinsle...@xxxxxxxxxxxx> wrote:

Well, hi once again. It's been about eight years since my last post to this group. The old mail browser I'd been using got overloaded, and I got wound up with real life, sort of. But it was only temporary, and now I have a problem of my own.

We took a lightning hit to somewhere along our power line tonight. I have a whole-house lightning protector, but there was a nice crackle from the power supply of the computer I was working on. That wasn't the problem, though. In the kitchen, the stove—Amana model AGS761W, a gas stove probably made in 1994, was beeping, showing 'F5' on its display. Unplugged it, tried all sorts of resetting techniques, nothing: it runs for thirty seconds and then beeps and displays F5.

The part in question is called an ERC, electronic range control, part number probably is 343461 but at this point I'm not sure, and all the parts houses tell me that it's no longer being made and unavailable. I have inquiries into Amana and repairclinic.com. eBay doesn't seem to have that control, though there are a couple of electronic control modules for other stoves, so I know I was doing a thorough search.

My guess is that 'F5' means 'bad module' or something helpful like that. Without the oven, I have an exceptionally unhappy Natalie, and she'd like me to get it figured out already. I cannot fathom being able to come up with a workaround for this unit: it incorporates the oven thermostat, the oven timer, and the self-cleaning oven stuff.

My strategy is to start at the power supply, which would have taken the initial hit from a power-line overvoltage, and then test each component in turn. Trouble is, the power supply is fine, because the various clock functions work, right up until the unit fails some sort of a self-test procedure about twenty seconds after you plug it in. Then we see 'F5.'

If anyone has any experience in this sort of thing, please let me know.

Mark Kinsler <http://www.mkinsler.com>, if it still works.

Re: the kitchen stove

Well, I may have fixed it. 'F5' is indeed the code for a bad electronic module, and there is indeed no replacement. And so, inspired by other posts here, I went a-hunting. There was a complementary pair of transistors on the board, 2n2222 and 2n3906, but an in-circuit ohmmeter test showed that those were probably okay. There was a gigantic microprocessor-sized chip beneath the fluorescent clock readout, an EEPROM, what looked like a processor peripheral made by Robertshaw, a Darlington amplifier array, and a discrete Darlington transistor pair.

Turning a necessity into virtue, I noted that since the module functioned properly, even turning on certain functions, for a couple of seconds. Then a self-check would fail, and shut the thing down. This made me think that the EEPROM was okay, and that the two processor-like chips probably were too. And if they weren't, I couldn't have replaced them anyway.

This left the Darlington arrays, which probably handled signals to and from the module. There's an oven temperature input, and probably something that tells us if the gas is lit in the broiler, and in the oven. And there'd be a switch input to tell if the door is open. That's four inputs. The outputs are to the broiler gas valve, the oven gas valve, the two ignitors for those units, and the motorized door latch that secures the door during the cleaning cycle. That's five outputs. Possibly something is multiplexed, or else I've added non-existent inputs or outputs, because there are only eight Darlington arrays, but okay.

Anyway, it seemed possible that these were ill, because a bad input would cause illogical test results. A bad output could screw things up too if the test procedure energized something and then measured its effects on the system, which is what they do in cars.

And so I've replaced the two Darlington devices. One cross-references to an NTE48, and the other to the NTE2013. They are the only devices that look like those on the board; replacement was a straightforward soldering job.

The stove seems to work fine now.

M Kinsler

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