CLAIMS

What is claimed is:

1. A gas meter control system, comprising:

a printed circuit board assembly (PCBA), comprising:

a processor;

a memory device in communication with the processor; and

commands stored in the memory device, comprising:

first commands stored in the memory device and accessible by the processor to operate a first metrology device of a first gas meter; and

second commands stored in the memory device and accessible by the processor to operate a second metrology device of a second gas meter, wherein the second gas meter is configured to measure gas flows that are greater than can be measured by the first gas meter;

third commands to recognize which one, between the first metrology device and the second metrology device, is in communication with the processor, thereby recognizing an available metrology unit; and

fourth commands for selecting and executing only one of the first commands or the second commands, wherein the selecting is based on a type of the available metrology unit recognized by the third commands; and

a bus pass-through device, comprising:

connectors for a bus; and

a gas-tight seal to separate a gas-environment and an air-environment upon installation.

2. The gas meter control system of claim 1, additionally comprising:

fifth commands and sixth commands to control respective at least two metrology in gas (MIG) PCBAs of a plurality of MIG PCBAs within the gas-environment, wherein the at least fifth commands and the sixth commands pass from the processor to the respective at least two MIG PCBAs over the bus, and wherein the bus is an I^2C bus.

3. The gas meter control system of claim 1, additionally comprising:

at least two sensor devices of a plurality of sensor devices in communication with an I^2C bus within the gas-environment; and

fifth commands and sixth commands stored in the memory device, which when executed communicate respectively with the at least two sensor devices using the I^2C bus.

4. The gas meter control system of claim 1, wherein the bus is an I^2C bus, and wherein the I^2C bus is configured to extend from the PCBA in the air-environment to a plurality of sensors contained in the gas-environment.

5. The gas meter control system of claim 1, wherein an I^2C bus extends from the PCBA in the air-environment to a plurality of sensors contained in the gas-environment, and wherein the I^2C bus is connected to the connectors for the bus of the bus pass-through device.

6. The gas meter control system of claim 1, additionally comprising:

fifth commands stored in the memory device that determine, for each of a plurality of devices configured for use in the gas-environment, which of the plurality of devices are present and which of the plurality of devices are not present; and

sixth commands stored in the memory device that:

control first devices that are present in the plurality of devices; and

do not execute the fifth commands associated with second devices that are not present in the plurality of devices.

7. The gas meter control system of claim 1, additionally comprising:

fifth commands stored in the memory device that determine a type or a model of meter in which the gas meter control system is installed; and

sixth commands stored in the memory device that select the commands for execution based at least in part on the type or the model of the meter.

8. The gas meter control system of claim 1, additionally comprising:

fifth commands stored in the memory device for detecting installation of an additional sensor; and

sixth commands stored in the memory device that operate the additional sensor responsive to the detecting of the installation of the additional sensor.

9. The gas meter control system of claim 1, wherein the commands are stored in the memory device to operate at least two of:

a metrology device configured for H_2 measurement;

a metrology device configured for biogas measurement; and

a metrology device configured for natural gas measurement.

10. The gas meter control system of claim 1, additionally comprising:

fifth commands stored in the memory device that determine that updated commands are available; and

sixth commands stored in the memory device that download and install the updated commands.

11. A method of manufacturing gas meters having at least two designs, the method comprising:

installing a first instance of a printed circuit board assembly (PCBA) into a first gas meter, wherein the PCBA comprises:

a processor;

a memory device in communication with the processor; and

commands stored in the memory device, comprising:

first commands stored in the memory device and accessible by the processor to operate a first metrology device of the first gas meter;

second commands stored in the memory device and accessible by the processor to operate a second metrology device of a second gas meter, wherein the second gas meter is configured to measure gas flows that are greater than can be measured by the first gas meter;

third commands to recognize which one, between the first metrology device and the second metrology device, is in communication with the processor, thereby recognizing an available metrology unit; and

fourth commands for selecting and executing only one of the first commands or the second commands, wherein the selecting is based on a type of the available metrology unit recognized by the third commands;

installing a second instance of the PCBA into the second gas meter;

installing the first instance of a first bus pass-through device in the first gas meter to allow first data communications between, but prevent a first gas-exchange between, an air-environment and a gas-environment of the first gas meter; and

installing the second instance of a second bus pass-through device in the second gas meter to allow second data communications between, but a second prevent gas-exchange between, an air-environment and a gas-environment of the second gas meter.

12. The method of claim 11, additionally comprising:

installing the first instance of an I^2C bus by connecting it through the first bus pass-through device of the first gas meter to provide the first data communications between the air-environment and the gas-environment of the first gas meter; and

installing the second instance of the I^2C bus by connecting it through the second bus pass-through device of the second gas meter to provide the second data communications between the air-environment and the gas-environment of the second gas meter.

13. The method of claim 11, additionally comprising:

determining, by execution of fifth commands at the first instance of the PCBA, a type or 1 model of the first gas meter, and executing sixth commands at the first

instance of the PCBA based at least in part on the type or the model of the first gas meter or based at least in part on devices present in the first gas meter.

14. The method of claim 11, additionally comprising:

updating the first commands and the second commands of the first instance of the PCBA, wherein the second commands are updated in the first instance of the PCBA but not executed by the processor of the first instance of the PCBA; and

updating the first commands and the second commands of the second instance of the PCBA, wherein the first commands are updated in the second instance of the PCBA but not executed by the processor of the second instance of the PCBA,

wherein a same update is sent to the first gas meter and the second gas meter.

15. The method of claim 11, additionally comprising:

discovering a sensor in communication with an I^2C bus of the first gas meter;

identifying a type of the sensor;

selecting fifth commands of the commands, as selected commands, for use in controlling the sensor based at least in part on the identifying of the type of the sensor; and

communicating with the sensor by execution of the fifth commands as the selected commands.

16. A gas meter, comprising:

a first portion of an enclosure having an air-environment;

a printed circuit board assembly (PCBA), within the first portion of the enclosure, the PCBA comprising:

a processor;

a memory device in communication with the processor; and

commands stored in the memory device, comprising:

first commands stored in the memory device and accessible by the processor to operate a first metrology device of a first gas meter;

second commands stored in the memory device and accessible by the processor to operate a second metrology device of a second gas meter, wherein the second gas meter is capable of measuring a greater gas flow than the first gas meter is capable of measuring;

third commands to recognize which one, between the first metrology device and the second metrology device, is in communication with the processor, thereby recognizing an available metrology unit; and

fourth commands for selecting and executing only one of the first commands or the second commands, wherein the selecting is based on a type of the available metrology unit recognized by the third commands;

a second portion of the enclosure having a gas-environment;

a metrology device, contained in the second portion, wherein the metrology device is one of the first metrology device of the first gas meter or the second metrology device of the second gas meter; and a bus pass-through device, comprising:

connectors for an I^2C bus; and

a gas-tight seal to separate the air-environment from the gas-environment.

17. The gas meter of claim 16, additionally comprising:

first and second sensor devices in communication with the I^2C bus within the gas-environment; and

fifth and sixth commands stored in the memory device, to communicate respectively with the first and second sensor devices using the I^2C bus.

18. The gas meter of claim 16, wherein the I^2C bus extends from the PCBA in the air-environment to connect to at least two devices of a plurality of sensor devices contained in the gas-environment.

19. The gas meter of claim 16, additionally comprising:

fifth commands stored in the memory device that determine identities of devices that are present in the gas-environment; and

sixth commands stored in the memory device that select primary commands of the commands for execution based at least in part on the determined identities of the devices that are present in the gas-environment.

20. The gas meter of claim 16, additionally comprising:

third fifth commands stored in the memory device that determine a type or model of the gas meter; and

fourth sixth commands stored in the memory device that select primary commands of the commands for execution based at least in part on the type or model of the gas meter.