

WHAT IS CLAIMED IS:

1. An optical meter reader apparatus (100) for reading data from a meter, the optical meter reader apparatus (100) comprising:

a housing (102);

a housing extension (120) connected to the housing (102), the housing extension (120) having a flat face (120A);

a first slot (130) formed on the flat face (120A);

a second slot (132) formed on the flat face (120A); and

an optical communication module (730) located within the housing (102) and the housing extension (120) and configured to exchange information with the meter (400) using infrared waves.

2. The optical meter reader apparatus of Claim 1, wherein the first and second slots are rectangular.

3. The optical meter reader apparatus of Claim 1, wherein a longitudinal axis of the first slot is perpendicular to a longitudinal axis of the second slot.

4. The optical meter reader apparatus of Claim 1, wherein the first and second slots are located diametrically opposite to each other and the flat face is circular.

5. The optical meter reader apparatus of Claim 1, wherein the optical communication module comprises:

an infrared light emitting diode that emits infrared light; and
a photodiode that detects the data as infrared light.

6. The optical meter reader apparatus of Claim 5, further comprising:
a microprocessor that is configured to control the infrared light emitting diode and to receive the data from the photodiode.

7. The optical meter reader apparatus of Claim 6, further comprising:
a radio-frequency module that transmits the data in a wireless manner.

8. The optical meter reader apparatus of Claim 7, further comprising:
an antenna attached to the housing and electrically connected to the radio-frequency module.

9. The optical meter reader apparatus of Claim 8, further comprising:
a power source.

10. A system (100, 400) for reading information from a meter (400) and transmitting the information to a server (804), the system comprising:
a meter (400) configured to estimate an amount of a product delivered by an utility throughout the meter;

a coupling device (420) attached to a face (410) of the meter (400); and
an optical meter reader apparatus (100) for reading the information from the
meter (400),

wherein the optical meter reader apparatus (100) is detachably attached to
the coupling device (420).

11. The system of Claim 10, wherein the coupling device comprises:

a metallic plate (422) attached to the face (410) of the meter, the metallic
plate having a slot that allows an optical communication module (450) of the meter to
freely exchange an infrared beam with the optical meter reader apparatus.

12. The system of Claim 11, wherein the metallic plate has first and second
blocks that fit inside first and second slots of the optical meter reader apparatus.

13. The system of Claim 12, wherein the optical meter reader apparatus
further comprises:

a housing (102);

a housing extension (120) connected to the housing (102), the housing
extension (120) having a flat face (120A);

the first slot (130) formed on the flat face (120A);

the second slot (132) formed on the flat face (120A); and

an optical communication module (730) located within the housing (102) and the housing extension (120) and configured to exchange the information with the meter (400).

14. The system of Claim 13, wherein the first and second slots and the first and second blocks are rectangular.

15. The system of Claim 13, wherein a longitudinal axis of the first slot is perpendicular to a longitudinal axis of the second slot.

16. The system of Claim 13, wherein the first and second slots are located diametrically opposite to each other and the flat face is circular.

17. The system of Claim 13, wherein the optical communication module of the optical meter reader apparatus comprises:

an infrared light emitting diode that emits infrared light; and
a photodiode that detects the information as infrared light.

18. The system of Claim 17, wherein the optical meter reader apparatus further comprises:

a microprocessor that is configured to control the infrared light emitting diode and to receive the information from the photodiode;

a radio-frequency module that transmits the information in a wireless manner;
an antenna attached to the housing and electrically connected to the radio-frequency module; and
a power source connected to the meter.

19. The system of Claim 13, wherein the optical meter reader apparatus further comprises:

a magnet (150) attached on a back of the flat face, the magnet being configured to establish mechanical contact between the flat face and the coupling device.

20. A method for collecting and transmitting information from a meter, the method comprising:

attaching (1000) a coupling device (420) to the meter (400);

attaching (1002) an optical meter reader apparatus (100) to the coupling device (420);

exchanging (1004) information embedded into infrared light (600) between the meter (400) and the optical meter reader apparatus (100); and

transmitting (1006) in a wireless manner the information from the optical meter reader apparatus to a server,

wherein the coupling device includes one or more blocks and the optical meter reader apparatus includes one or more slots that accommodate the one or

more blocks, respectively, so that the optical meter reader apparatus does not move relative to the meter.