CLAIMS

1. An in-vehicle unit that is used in each of a plurality of host vehicles including a subject vehicle and a plurality of nearby vehicles near the subject vehicle, the in-vehicle unit including an inter-vehicle communicator to transmit and receive information using inter-vehicle communication,

the in-vehicle unit used in the subject vehicle, comprising:

a criterion value setting section that

receives a different-unit installation state index that is transmitted via the inter-vehicle communicator using the inter-vehicle communication and

sets successively a criterion value of an installation state index from the received different-unit installation state index,

the different-unit installation state index being specified based on an output value from a sensor instrument that successively outputs an output value corresponding to an installation state of the in-vehicle unit on each of the nearby vehicles; and

a different-unit anomaly detection section that detects an abnormal installation state of the in-vehicle unit on a target nearby vehicle that is a predetermined diagnosis target among the nearby vehicles

by comparing the criterion value set by the criterion value setting section with the different-unit installation state index received via the inter-vehicle communicator from the target nearby vehicle.

2. The in-vehicle unit according to claim 1, wherein

the in-vehicle unit used in the subject vehicle includes:

a sensor instrument that successively outputs an output value corresponding to an installation state of the in-vehicle unit on the subject vehicle;

a self-unit installation state index specification section that specifies a self-unit installation state index concerning the in-vehicle unit in the subject vehicle based on an output value from the sensor instrument in the in-vehicle unit in the subject vehicle; and

a self-unit anomaly detection section that detects an abnormal installation state of the in-vehicle unit on the subject vehicle

by comparing the criterion value set by the criterion value setting section with the self-unit installation state index specified by the self-unit installation state index specification section.

3. The in-vehicle unit according to claim 2, wherein

the in-vehicle unit used in the subject vehicle includes:

a wide area communicator that communicates with a center via a communication network; and

a self-unit anomaly notification processing section that causes the wide area communicator to notify the center that the self-unit anomaly detection section detects an abnormal installation state of the in-vehicle unit on the subject vehicle.

4. The in-vehicle unit according to claim 2 or 3,

wherein the in-vehicle unit used in the subject vehicle receives, via the inter-vehicle communicator using the inter-communication, different-unit positioning information that is successively detected in the nearby vehicles by using a satellite positioning system, in addition to the different-unit installation state index transmitted from the nearby vehicles, and

wherein the in-vehicle unit used in the subject vehicle includes:

a positioning information acquisition section that acquires self-unit positioning information about the subject vehicle, the self-unit positioning information being successively detected in the subject vehicle by using the satellite positioning system,

wherein the self-unit anomaly detection section detects an abnormal installation state of the in-vehicle unit on the subject vehicle

by comparing the self-unit installation state index specified by the self-unit installation state index specification section with a criterion value set by the criterion value setting section,

the criterion value being set based on a different-unit

installation state index received from a nearby vehicle whose different-unit positioning information approximates to the self-unit positioning information of the subject vehicle, among the different-unit installation state indexes received from the nearby vehicles via the inter-vehicle communicator.

5. The in-vehicle unit according to claim 1 or 2, wherein

the in-vehicle unit used in the subject vehicle includes:

a wide area communicator that communicates with a center via a communication network; and

a different-unit anomaly notification processing section that causes the wide area communicator to notify the center that the different-unit anomaly detection section detects an abnormal installation state of the in-vehicle unit on the target nearby vehicle.

6. The in-vehicle unit according to claim 1, 2, or 5,

wherein:

the in-vehicle unit used in the subject vehicle receives, via the inter-vehicle communicator using the inter-vehicle communication, different-unit positioning information successively output from the nearby vehicles by using a satellite positioning system, in addition to the different-unit installation state index transmitted from the nearby vehicles; and

the different-unit anomaly detection section detects an abnormal installation state of the in-vehicle unit on the target nearby vehicle

by comparing the different-unit installation state index received from the target nearby vehicle with a criterion value set by the criterion value setting section,

the criterion value being set based on a different-unit installation state index received from a nearby vehicle whose different-unit positioning information approximates to the different-unit installation information of the target nearby vehicle, among the different-unit installation state indexes received from the nearby vehicles via the inter-vehicle communicator.

7. An in-vehicle unit that is used in each of a plurality of host vehicles including a subject vehicle and at least one nearby vehicle near the subject vehicle,

each in-vehicle unit comprising:

a sensor instrument that successively outputs an output value corresponding to an installation state of the in-vehicle unit on each of the host vehicles; and

an inter-vehicle communicator that transmits and receives information using inter-vehicle communication,

the in-vehicle unit used in the subject vehicle, comprising:

a criterion value setting section that

receives a different-unit installation state index that is transmitted via the inter-vehicle communicator using the inter-vehicle communication and

sets successively a criterion value of an installation state index from the received different-unit installation state index,

the different-unit installation state index being specified based on an output value from the sensor instrument that successively outputs an output value corresponding to an installation state of the in-vehicle unit on each of the at least one nearby vehicle;

a self-unit installation state index specification section that specifies a self-unit installation state index concerning the in-vehicle unit in the subject vehicle based on an output value from the sensor instrument in the in-vehicle unit in the subject vehicle; and

a self-unit anomaly detection section that detects an abnormal installation state of the in-vehicle unit on the subject vehicle

by comparing the criterion value set by the criterion value setting section with the self-unit installation state index specified by the self-unit installation state index specification section.

8. The in-vehicle unit according to claim 7, wherein

the in-vehicle unit used in the subject vehicle includes:

a wide area communicator that communicates with a center via a communication network; and

a self-unit anomaly notification processing section that causes the wide area communicator to notify the center that the self-unit anomaly detection section detects an abnormal installation state of the in-vehicle unit on the subject vehicle.

9. The in-vehicle unit according to claim 7 or 8,

wherein the in-vehicle unit used in the subject vehicle receives, via the inter-vehicle communicator using the inter-communication, different-unit positioning information that is successively detected in the at least one nearby vehicle by using a satellite positioning system, in addition to the different-unit installation state index transmitted from the at least one nearby vehicle, and

wherein the in-vehicle unit used in the subject vehicle includes:

a positioning information acquisition section that acquires self-unit positioning information about the subject vehicle, the self-unit positioning information being successively detected in the subject vehicle by using the satellite positioning system,

wherein the self-unit anomaly detection section detects an abnormal installation state of the in-vehicle unit on the subject vehicle

by comparing the self-unit installation state index specified by the self-unit installation state index specification section with a criterion value set by the criterion value setting section,

the criterion value being set based on a different-unit installation state index received from a nearby vehicle whose different-unit positioning information approximates to the self-unit positioning information of the subject vehicle, among the different-unit installation state index received from the at least one nearby vehicle via the inter-vehicle communicator.

10. The in-vehicle unit according to any one of claims 1 through 9, wherein the sensor instrument includes an iluminance sensor.