

MessagesHandlerTest

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| Transition between Code blocks | Test name and test purpose |
| 1.-2.-3. | MessagesHandlerTest.test\_run\_1:  Verify that once the messagesHandler() function is called while the isClientManagerRunning flag is equal to true, the client manager class instance that runs the messagesHandler() function is able to read messages send from TCPserver. |
| 1.-2.-22. | MessagesHandlerTest.test\_run\_2:  Verify that once the messagesHandler() function is called while the isClientManagerRunning flag is set to false, the client manager class instance that runs the messagesHandler() function is NOT able to read messages send from TCPserver. |
| 1.-2.-3.-4. | MessagesHandlerTest.test\_run\_3:  Verify that once the messagesHandler() function is called, it hangs in the readMessage() function until it gets a new message from TCPserver. It is verified also that the state machine of messagesHandler() function is executed for all messages received from TCPserver, but every time the currently processing message is different from the previous. |
| 4.-5.-7. | MessagesHandlerTest.test\_run\_4:  Verify that once the messagesHandler() function receives any message from TCPserver that has different sensor ID than the sensor ID that is written to the Client Manager class instance, the state machine of messagesHandler() function sends ClientMessage\_SensorInfo with the new sensor ID to confirm that this sensor ID was set intentionally. Verify also that the new sensor ID is also set for the sensor in Client\_Sensors\_LIST. |
| 3. | ReadMessageTest.test\_run\_1:  Verify that once the readMessage() function is called, an incoming message from TCPserver is read from an input object stream. |
| 4.-5.-6.-8. | ReadMessageTest.test\_run\_2:  Verify that SocketException is thrown if the client socket for an input object stream was closed while the readMessage() function was expecting for a new message from TCPserver. |
| 4.-5.-6.-8. | ReadMessageTest.test\_run\_3:  Verify that ClassCastException is thrown if the message received by the readMessage() function is not a message of the Message\_Interface type. |
| 10.-15.-30. | SendMessageTest.test\_run\_1:  Verify that the sendMessage() function for the ClientManager class instance writes an object to the previously opened object output stream for a client socket. |
| 19.-20.-21. | SendMessageTest.test\_run\_2:  Verify that SocketException is thrown if there was an attempt to call the sendMessage() function for a client manager class instance that has its object output stream closed. |
| 19.-20.-21. | SendMessageTest.test\_run\_3:  Verify that IllegalArgumentException is thrown if there was an attempt to call the sendMessage() function for a client manager class instance without initializing its object output stream. |



MessagesHandlerTest\_ServerMessage\_SensorInfoUpdate

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| Transition between Code blocks | Test name and test purpose |
| 9.-10.-15.-24.-25.-26.-27.-30.-35.-36. | MessagesHandlerTest\_ServerMessage\_SensorInfoUpdate.test\_run\_1:  Verify that the messagesHandler() function responds to ServerMessage\_SensorInfoUpdate with ClientMessage\_BootUp if the received sensor state is either SensorState.MAINTENANCE or SensorState.PRE\_OPERATIONAL.Verify also that the sensor instance in Client\_Sensors\_LIST is updated with the new settings a the new sensor state and the resetSensor() function is called. |
| 9.-10.-15.-25.-26.-28.-32.-33.-36. | MessagesHandlerTest\_ServerMessage\_SensorInfoUpdate.test\_run\_2:  Verify that the messagesHandler() function responds to ServerMessage\_SensorInfoUpdate with ClientMessage\_ACK if the received sensor state is SensorState.OPERATIONAL. Verify also that the sensor instance in Client\_Sensors\_LIST is updated with the received watchdog\_scale\_factor and sensor state. |
| 9.-10.-15.-25.-26.-29.-31.-34.-36. | MessagesHandlerTest\_ServerMessage\_SensorInfoUpdate.test\_run\_3:  Verify that the messagesHandler() function responds to ServerMessage\_SensorInfoUpdate with ClientMessage\_ACK if the received sensor state is SensorState.DEAD. Verify also that the sensor instance in Client\_Sensors\_LIST is updated with the sensor state and the isClientManagerRunning is set to false. |
| 9.-10.-15.-36.-37.-38.-41. | MessagesHandlerTest\_ServerMessage\_SensorInfoUpdate.test\_run\_4:  Verify that the messagesHandler() function updates watchdogs\_scale\_factor and measurements\_limit of the TCPclient class instance regardless of the received sensor state in ServerMessage\_SensorInfoUpdate. Verify also that Local\_1h\_Watchdog is enabled and its timeLeftBeforeExpiration is synchronized with Global\_1h\_Watchdog.timeLeftBeforeExpiration that was received in ServerMessage\_SensorInfoUpdate. |
| 9.-10.-15.-36.-39.-40.-41. | MessagesHandlerTest\_ServerMessage\_SensorInfoUpdate.test\_run\_5:  Verify that the messagesHandler() function sets the is ClientManagerRunning flag to false to close the TCP connection if the sensor state is set to SensorState.OPERATIONAL and the received Global\_1h\_Watchdog.timeLeftBeforeExpirationis higher than Local\_1h\_Watchdog.\_1h\_WatchdogExpiration divided by 4. |



MessagesHandlerTest\_ServerMessage\_SensorInfoQuerry

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| Transition between Code blocks | Test name and test purpose |
| 9.-10.-11.-26.-42.-43.-44. | MessagesHandlerTest\_ServerMessage\_SensorInfoQuerry.test\_run\_1:  Verify that the messagesHandler() function responds to ServerMessage\_SensorInfoQuerry with ClientMessage\_SensorInfo. |



MessagesHandlerTest\_ServerMessage\_Request\_MeasurementHistory

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| Transition between Code blocks | Test name and test purpose |
| 9.-10.-11.-12.-13.-14.-45.-46.-47.-48. | MessagesHandlerTest\_ServerMessage\_Request\_MeasurementHistory.test\_run\_1:  Verify that the messagesHandler() function responds to ServerMessage\_Request\_MeasurementHistory with ClientMessage\_MeasurementHistory if the wait\_for\_measurement\_history flag is set to true as a result of reaching of the mesurement limit by the latest ServerMessage\_Request\_MeasurementData. |
| 9.-10.-11.-12.-13.-14.-45.-46.-52. | MessagesHandlerTest\_ServerMessage\_Request\_MeasurementHistory.test\_run\_2:  Verify that the messagesHandler() function ignores ServerMessage\_Request\_MeasurementHistory if the wait\_for\_measurement\_history flag is NOT set to true. |
| 9.-10.-11.-12.-13.-14.-49.-50.-51.-52. | MessagesHandlerTest\_ServerMessage\_Request\_MeasurementHistory.test\_run\_3:  Verify that the messagesHandler() function reads all measurement data from the current cycle and sends it in ClientMessage\_MeasurementHistory. Verify also that the state machine of messagesHandler() resets the sensor instance upon completion of ServerMessage\_Request\_MeasurementHistory processing. |



MessagesHandlerTest\_ServerMessage\_Request\_MeasurementData

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| Transition between Code blocks | Test name and test purpose |
| 9.-10.-11.-12.-13.-17.-54.-57. | MessagesHandlerTest\_ServerMessage\_Request\_MeasurementData.test\_run\_1:  Verify that the messagesHandler() function responds to ServerMessage\_Request\_MeasurementData with ClientMessage\_MeasurementData if the wait\_for\_measurement\_data flag is set to true as a result of the prevoius processing of ServerMessage\_SensorInfoUpdate by the state machine of messagesHandler(). |
| 9.-10.-11.-12.-13.-17.-54.-61. | MessagesHandlerTest\_ServerMessage\_Request\_MeasurementData.test\_run\_2:  Verify that the messagesHandler() function ignores ServerMessage\_Request\_MeasurementData if the wait\_for\_measurement\_data flag is NOT set to true. |
| 9.-10.-11.-12.-13.-17.-53.-54.-55.-56.-58.-60-61. | MessagesHandlerTest\_ServerMessage\_Request\_MeasurementData.test\_run\_3:  Verify that the messagesHandler() function generates a new measurement that is sent in ClientMessage\_MeasurementData. Verify also that the sensor instance in Client\_Sensors\_LIST is updated with the newest measurement and its numberOfMeasurements is increased. |
| 9.-10.-11.-12.-13.-17.-53.-54.-58-59.-60.-61. | MessagesHandlerTest\_ServerMessage\_Request\_MeasurementData.test\_run\_4:  Verify that the messagesHandler() function sets back the wait\_for\_measurement\_data to false, hence it is not possible to send more than one measurement data within one TCP connection cycle. Verify also that if number of Measurements is equal to the Measurement Limit, the wait\_for\_measurement\_history flag is set to true. |



MessagesHandlerTest\_ServerMessage\_ACK

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| Transition between Code blocks | Test name and test purpose |
| 9.-10.-11.-12.-18.-62.-63. | MessagesHandlerTest\_ServerMessage\_ServerMessage\_ACK.test\_run\_1:  Verify that the messagesHandler() function responds to ServerMessage\_ACK with ClientMessage\_ACK. |
| 9.-10.-11.-12.-18.-64.-65.-67.-68.-69.-70. | MessagesHandlerTest\_ServerMessage\_ServerMessage\_ACK.test\_run\_2:  Verify that the messagesHandler() sets the isClientManagerRunning flag to false, synchronizes Local\_1h\_Watchdog.timeLeftBeforeExpiration with Global\_1h\_Watchdog.timeLeftBeforeExpiration received in ServerMessage\_ACK and enables Local\_1h\_Watchdog if ServerMessage\_ACK was received when the wait\_for\_measurement\_history flag is set to false. |
| 9.-10.-11.-12.-18.-64.-66.- 70. | MessagesHandlerTest\_ServerMessage\_ServerMessage\_ACK.test\_run\_3:  Verify that the messagesHandler() sets the isClientManagerRunning flag to false, Verify that the messagesHandler() disables Local\_1h\_Watchdog if ServerMessage\_ACK was received when the wait\_for\_measurement\_history flag is set to true |