Interface Specification

IoT.NET

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VISAS / VERSIONS

	REDACTION	VERIFICATION
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1 介绍

1.1 目的

在当今工业4.0的大趋势下，万物互联已经成为了必然趋势，为了保持持续的创新性，本公司将开展IoT项目，固本文档提供了我司对于IoT接口的要求，原则上，所有设备都需要遵循该文档，将设备信息透明化，在满足条件的情况下，发布有关设备的相关信息，另外所有例程和最新的文档将更新到下面的文件中，集成商拿到需求后，请自行下载最新版本的文件和例程，将其集成到自身的软件当中。

https:/github.com/liuguobin11/IoT.NET.git

1.2 缩写对应表

AOI	automatic optical inspection
ATF	address table file
BGA	ball grid array
BIB	boot information block
BIST	built in self test
BOM	bill of material
CAN	controller area network
CC	critical characteristics
CFT DL	cross function testing design and launch
DAE	pressure compensation unit
Div.Q	division quality responsible
DMC	data matrix code
DTP	data to production
DUT	device under test
EE SW	Electrical engineer SW (software developer)
ECR	engineering change request
ECU	electronic control unit
EE	electrical engineer (hardware developer)
EOL	end of line
ESD	electrostatic discharge
HT	high temperature
IC	integrated circuit
ICT	in circuit test
IE test	industrial engineer testing (local test specialist)
IO	information management and organization
IPG	intelligent peripheral interface
IPGTC	intelligent peripheral interface total controller
K-line	communication line
Loc.Q	location quality responsible (manufacturing quality)

LT	low temperature
MD	mechanical design
MM	Manufacturing mode
MOI	manual optical inspection
NPLM	New product launch manager (manufacturing planner)
NVM	non volatile memory
PCB	printed circuit board
PLL	phase-locked loop
PT	process technology
PTS	production test specification
PTS O	PTS owner (EE or TE L)
QMP	quality manager project (quality response)
QMPP	quality manager project production (local Q)
RT	room temperature
SC	special characteristics
SPC	statistical process control
SW	software
TPL	technical project leader
TE E	Test engineer equipment (from CFT DL prototyping department)
TE L	Test engineer product launch (from CFT DL test coverage)
WFC	Wheel Fitted Component
WR	Warranty return center

2 .NET 接口和功能

2.1 实例化对象

2.1.1 引入 using

```
using MoonlakeTools.MQTT;
```

2.1.2 函数接口说明

```
/// <summary>
/// IoTAction
/// </summary>
/// <param name="equipment">设备名称(同MES)</param>
/// <param name="url">IoT 服务器IP</param>
/// <param name="port">IoT 服务器端口</param>
/// <param name="userName">用户名</param>
/// <param name="passWord">密码</param>
public IoTAction(string equipment, string url = "127.0.0.1", int port = 1883, string userName = null, string passWord = null)
```

2.1.3 使用例程

```
IoTAction ioTAction = new IoTAction("BS_VI_ASSY_FINAL_21", "127.0.0.1", 1883);

ioTAction.Connect();
```

注：具体项目的服务器IP不同，请进场后与工程师获取

2.2 报警信息

2.3 产品信息

在每个产品发送Unit_Result后，使用下面的接口，将产品相关信息进行发布。

2.3.1 函数接口说明：

```
/// <summary>
/// PublishWIPSingle
/// </summary>
/// <param name="uid">产品序列号</param>
/// <param name="result">结果</param>
/// <param name="cycleTime">节拍</param>
/// <param name="materialName">材料号</param>
/// <returns></returns>
public bool PublishWIPSingle(string uid, bool result, string cycleTime, string materialName)
```

```
/// <summary>
/// PublishWIPPanel
```

```
/// </summary>
/// <param name="uid">产品序列号</param>
/// <param name="result">结果</param>
/// <param name="cycleTime">节拍</param>
/// <param name="materialName">材料号</param>
/// <returns></returns>
public bool PublishWIPPanel(string uid, bool result, string cycleTime, string materialName)
```

2.3.2 使用例程：

```
ioTAction.PublishWIPSingle("9529680912011287813", true, "7.8", "A2C9619770403");//单板产品
ioTAction.PublishWIPPanel("9529680912011287813", true, "7.8", "A2C9619770403");//Panel产品
```

2.4 换型信息

2.5 耗材信息

2.6 传感器等信息

2.7 参数信息

每天发布一次设备所有参数的文本信息，例如：MES的IP和端口号；测试值的上限下限等。

2.7.1 函数接口说明：

```
/// <summary>
/// Publish Parameter
/// </summary>
/// <param name="parameter">参数</param>
/// <returns></returns>
public bool PublishParameter(string parameter)
```

2.7.2 使用例程：

```
ioTAction.PublishParameter("10.221.128.93:40122");
```

2.8 产品参数信息

在每个产品发送Unit_Result后，使用下面的接口，将产品相关信息进行发布。

2.8.1 函数接口说明：

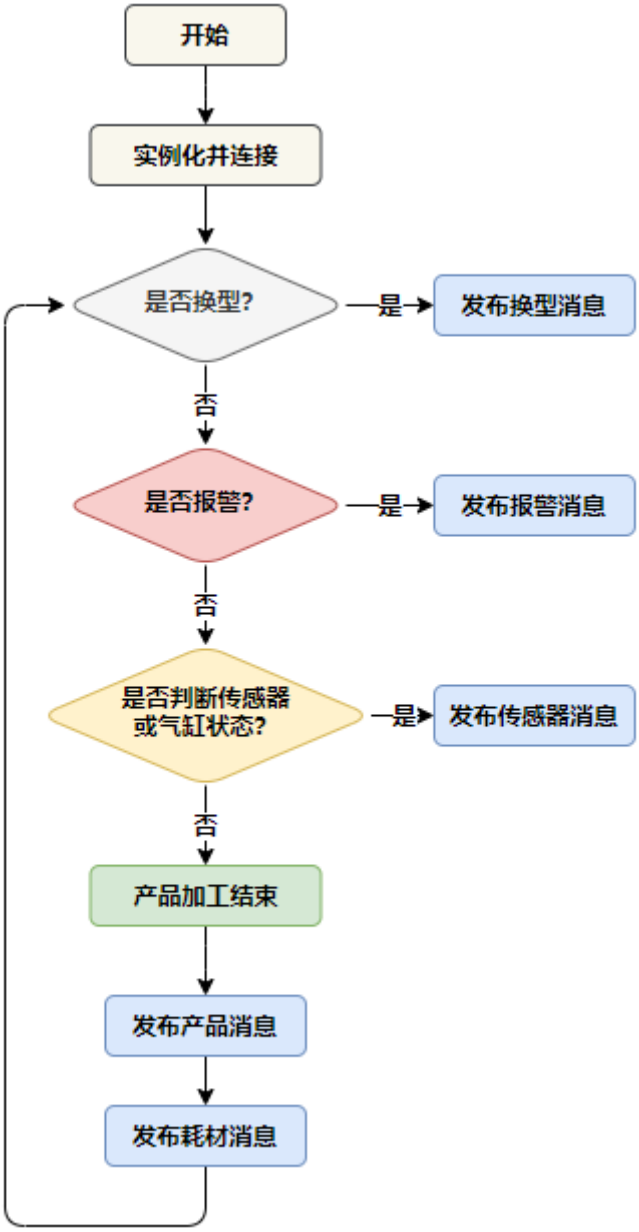
```
/// <summary>
/// Publish Parameter
/// </summary>
/// <param name="parameter">参数</param>
/// <returns></returns>
/// <summary>
/// PublishEVAPROD
/// </summary>
/// <param name="uid">产品序列号</param>
/// <param name="parameter">参数</param>
/// <param name="result">结果</param>
/// <param name="value">值</param>
/// <param name="lsl">上限</param>
/// <param name="usl">下限</param>
/// <returns></returns>


public bool PublishEVAPROD(string uid, string parameter, bool result, string value, string lsl, string usl)
```

2.8.2 使用例程：

```
ioTAction.PublishEVAPROD("9529680912011287813", "Presure", true, "7", "6", "9");
```

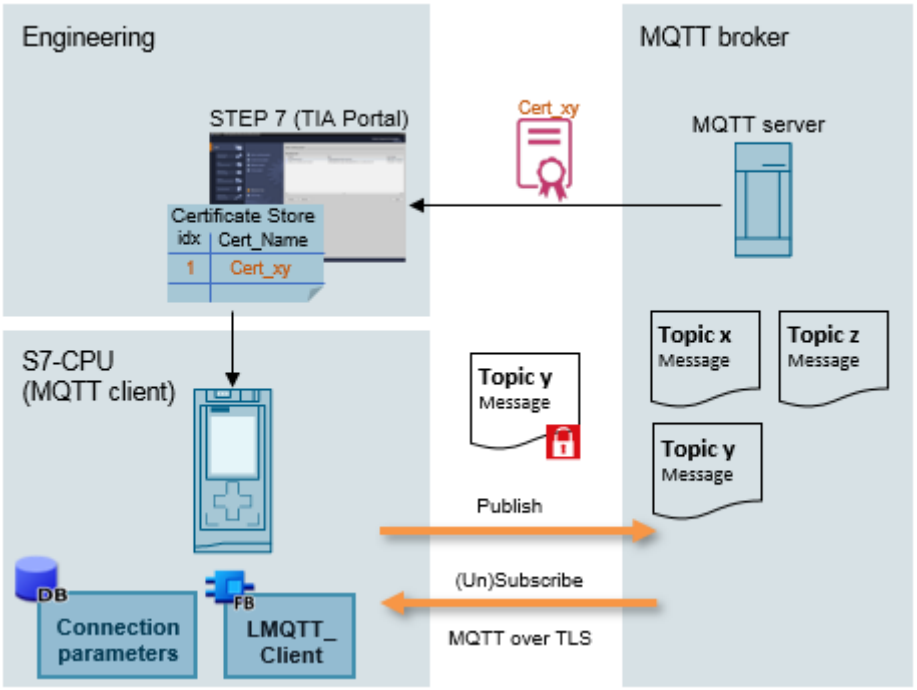
3 消息发布流程图


开始
实例化并连接
是否换型?
是
发布换型消息
否
是否报警?
是
发布报警消息
否
是否判断传感器
或气缸状态?
是
发布传感器消息
否
产品加工结束
发布产品消息
发布耗材消息

4 PLC 消息发布

西门子的LMQTT_CLIENT使用的时MQTT3.1.1协议，“LMQTT_Client”库是实现SIMATIC S7控制器的MQTT协议通信的功能块，可以用在SIMATIC S7-1500、SIMATIC S7-1200 和 SIMATIC S7-300 中。函数块“LMQTT_Client”集成了MQTT客户机所有功能，允许您将MQTT消息传输到代理(发布者角色)和创建订阅(订阅者角色)。同时可以通过TLS来保证安全通信。

下图显示了SIMATIC S7-1500的安全mqtt消息传递。



“LMQTT_Client”库文件下载网址如下：

https://support.industry.siemens.com/cs/ww/en/view/109748872

Todo： PLC发布的消息种类