**TwinCAT HMI Echart实现显示24小时数据**

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| **摘 要：**显示24小时数据的波形图，两种方式进行显示，plc代码中提供单个的数据，在js代码中进行数据处理，这样显示的数据在HMI界面加载的数据就是从0开始然后再加载，第二种方式是通过plc代码中的数组去实现。 |
| **附 件：**

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| --- | --- | --- |
| 序 号 | 文件名 | 备注 |
| 1 | Echart显示24小时数据.zip | 例程汇总 |
| 2 | TcHmiProject\_Linechart2.zip | 2.2节例程 |
| 3 | TcHmiProject\_Linechart3.zip | 2.3节例程 |
|  |  |  |

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| **历史版本：**

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| **免责声明：**我们已对本文档描述的内容做测试。但是差错在所难免，无法保证绝对正确并完全满足您的使用需求。本文档的内容可能随时更新，如有改动，恕不事先通知，也欢迎您提出改进建议。 |
| **参考信息：** |

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# 方式一：通过js处理数据然后显示

通过js语言实现，将plc采集的数据通过数组的移位进行处理，首先移位然后再进行数据的压栈操作实习数据的动态显示。

var chartDom = document.getElementById('TcHmiContainer');

 var myChart = echarts.init(chartDom);

 var option;

 var PLCvalue2;

 var PLCvalue1;

 var Xname = [];

 var data = [];

 var data1 = [];

 var counter = 0;

 var dataname;

 for (var i = 0; i < 1440; i++) { //初始化x轴的数据，可以根据实际情况设置1440数值的大小设置x轴坐标显示的。

 var d = new Date();

 Xname[i] = d.getHours() + ':' + d.getMinutes();

 data[i] = 0;//sy;ValMath.random() \* 21;

 data1[i] = 0;

 }

 var symbol = new TcHmi.Symbol('%s%PLC1.MAIN.Power1%/s%');

 var destroySymbol = symbol.watch(function (data) {

 if (data.error === TcHmi.Errors.NONE) {

 // Handle result value...

 PLCvalue1 = data.value;

 // console.log(value);

 } else {

 // Handle error...

 }

 // Stop watch inline

 // data.destroy(); // Call the destroy function inline to stop the watch and free resources.

 });

 var symbol = new TcHmi.Symbol('%s%PLC1.MAIN.Power2%/s%');

 var destroySymbol = symbol.watch(function (data) {

 if (data.error === TcHmi.Errors.NONE) {

 // Handle result value...

 PLCvalue2 = data.value;

 // console.log(value);

 } else {

 // Handle error...

 }

 // Stop watch inline

 // data.destroy(); // Call the destroy function inline to stop the watch and free resources.

 });

 option = {

 title: {

 text: '功率曲线'

 },

 tooltip: {

 trigger: 'axis'

 },

 legend: {

 data: ['功率1', '功率2']

 },

 grid: {

 left: '3%',

 right: '4%',

 bottom: '3%',

 containLabel: true

 },

 //toolbox: {

 // feature: {

 // saveAsImage: {}

 // }

 //},

 dataZoom: [

 {

 show: true,

 realtime: true,

 start: 80,

 end: 100

 },

 {

 type: 'inside',

 realtime: true,

 start: 65,

 end: 85

 }

 ],

 xAxis: {

 type: 'category',

 boundaryGap: false,

 data: Xname

 },

 yAxis: {

 type: 'value'

 },

 series: [

 {

 name: '功率1',

 type: 'line',

 //stack: 'Total',

 data: data,

 smooth: true

 },

 {

 name: '功率2',

 type: 'line',

 //stack: 'Total',

 data: data1,

 smooth: true,

 }

 ]

 };

 intervalId = setInterval(function () {

 var d = new Date();

 Xname.shift();

 Xname.push(d.getHours() + ':' + d.getMinutes());

 data.shift();

 data.push(PLCvalue1);

 data1.shift();

 data1.push(PLCvalue2);

 myChart.setOption({

 series: [

 {

 data: data

 },

 {

 data: data1

 }

 ]

 });

 // myChart.setOption(option);

 }, 1000);



# 方式二：通过plc代码实现

在PLC中将数据进行处理，然后直接再Echart图表中显示。

## PLC代码处理

PROGRAM MAIN

VAR

Power1 :LREAL;

 Power2 :LREAL;

 bBool AT%Q\* :BOOL;

 counter :INT ;

 yAxis : ARRAY [0..99] OF REAL;

 XAxis : ARRAY [0..99] OF STRING;

 myGETSYSTEMTIME: GETSYSTEMTIME;

 myFileTime : T\_FILETIME;(\*获取格林威治时间后要加上时区的偏移，部分国家还存在夏令时调整\*)

 myFileTime\_ul:T\_LARGE\_INTEGER;

 myCurTime :Timestruct;

 myCurDT : DT;

 ul\_8h:T\_LARGE\_INTEGER:=(dwHighPart:=16#43,dwLowPart:=16#0E234000); (\*8 hours time zone\*)

 TimeStamp:STRING(60);

 TimeStamp1:STRING(20);

 TimewHour:STRING(10);

 TimewMinute:STRING(10);

 TimewSecond:STRING(10);

 ton1:Tc2\_Standard.TON;

END\_VAR

TimewHour:=WORD\_TO\_STRING(myCurTime.wHour); //myCurTime WORD\_TO\_STRING

TimewMinute :=WORD\_TO\_STRING(myCurTime.wMinute);

TimewSecond := WORD\_TO\_STRING(myCurTime.wSecond);

TimeStamp1 :=CONCAT(TimewHour,':');

TimeStamp1:=CONCAT(TimeStamp1,TimewMinute);

TimeStamp1:=CONCAT(TimeStamp1,':');

TimeStamp1:=CONCAT(TimeStamp1,TimewSecond);

counter:=counter+1;

Power1 :=Power1 +0.1;

IF Power1 >100 THEN

 Power1 :=0;

END\_IF

Power2 :=Power2 +0.2;

IF Power2 >100 THEN

 Power2 :=0;

END\_IF

ton1(IN:=TRUE , PT:=T#1S , Q=> , ET=> ); //实现数据的1s移位1次

IF ton1.Q THEN

 XAxis[99]:=TimeStamp1;

 yAxis[99] :=Power2;

 FOR i:=0 TO 98 DO

 yAxis[i] :=yAxis[i+1];

 XAxis[i] :=XAxis[i+1];

 END\_FOR

 ton1(IN:=FALSE , PT:=T#1S , Q=> , ET=> );

END\_IF

## Js代码通过计时器实现

var chartDom = document.getElementById('TcHmiContainer\_10');

 var myChart = echarts.init(chartDom);

 var option;

 var Xname = [];

 var data1 = [];

//

 /// for (var i = 0; i < 100; i++) {

 // var d = new Date();

 /// Xname[i] = d.getHours() + ':' + d.getMinutes() + ':' + d.getSeconds();

 // data[i] = 0;//sy;ValMath.random() \* 21;

 // data1[i] = 0;

 /// } %s%PLC1.MAIN.XAxis%/s%

 //%s%PLC1.MAIN.aPoints%/s%

 var symbol = new TcHmi.Symbol('%s%PLC1.MAIN.XAxis%/s%');

 var destroySymbol = symbol.watch(function (data) {

 if (data.error === TcHmi.Errors.NONE) {

 // Handle result value...

 Xname = data.value;

 // console.log(value);

 } else {

 // Handle error...

 }

 // Stop watch inline

 // data.destroy(); // Call the destroy function inline to stop the watch and free resources.

 });

 var symbol = new TcHmi.Symbol('%s%PLC1.MAIN.yAxis%/s%');

 var destroySymbol = symbol.watch(function (data) {

 if (data.error === TcHmi.Errors.NONE) {

 // Handle result value...

 data1 = data.value;

 // console.log(value);

 } else {

 // Handle error...

 }

 // Stop watch inline

 // data.destroy(); // Call the destroy function inline to stop the watch and free resources.

 });

 option = {

 title: {

 text: '风速（m/s）'

 },

 tooltip: {

 trigger: 'axis'

 },

 grid: {

 left: '2%',

 right: '2%',

 bottom: '0%',

 containLabel: true

 },

 xAxis: {

 type: 'category',

 boundaryGap: false,

 data: Xname

 },

 yAxis: {

 min:0, //取0为最小刻度

 max: 100, //取100为最大刻度

 type: 'value'

 },

 series: [

 {

 name: '功率1',

 type: 'line',

 //stack: 'Total',

 data: data1,

 smooth: true

 },

 ]

 };

 intervalId = setInterval(function () {

 myChart.setOption({

 xAxis: {

 data: Xname

 },

 series: [

 {

 data: data1

 }

 ]

 });

 // myChart.setOption(option);

 }, 1000);

 option && myChart.setOption(option);

## Js代码通过watch实现

var symbol = new TcHmi.Symbol('%s%PLC1.MAIN.yAxis%/s%');

 var destroySymbol = symbol.watch(function (data) {

 if (data.error === TcHmi.Errors.NONE) {

 // Handle result value...

 data1 = data.value;

 myChart.setOption({

 xAxis: {

 data: Xname

 },

 series: [

 {

 data: data1

 }

 ]

 });

 // console.log(value);

 } else {

 // Handle error...

 }

 // Stop watch inline

 // data.destroy(); // Call the destroy function inline to stop the watch and free resources.

 });

 具体代码如下：

 var chartDom = document.getElementById('TcHmiContainer\_10');

 var myChart = echarts.init(chartDom);

 var option;

 var Xname = [];

 var data1 = [];

//

 /// for (var i = 0; i < 100; i++) {

 // var d = new Date();

 /// Xname[i] = d.getHours() + ':' + d.getMinutes() + ':' + d.getSeconds();

 // data[i] = 0;//sy;ValMath.random() \* 21;

 // data1[i] = 0;

 /// } %s%PLC1.MAIN.XAxis%/s%

 //%s%PLC1.MAIN.aPoints%/s%

 var symbol = new TcHmi.Symbol('%s%PLC1.MAIN.XAxis%/s%');

 var destroySymbol = symbol.watch(function (data) {

 if (data.error === TcHmi.Errors.NONE) {

 // Handle result value...

 Xname = data.value;

 // console.log(value);

 } else {

 // Handle error...

 }

 // Stop watch inline

 // data.destroy(); // Call the destroy function inline to stop the watch and free resources.

 });

 option = {

 title: {

 text: '风速（m/s）'

 },

 tooltip: {

 trigger: 'axis'

 },

 grid: {

 left: '2%',

 right: '2%',

 bottom: '0%',

 containLabel: true

 },

 xAxis: {

 type: 'category',

 boundaryGap: false,

 data: Xname

 },

 yAxis: {

 min:0, //取0为最小刻度

 max: 100, //取100为最大刻度

 type: 'value'

 },

 series: [

 {

 name: '功率1',

 type: 'line',

 //stack: 'Total',

 data: data1,

 smooth: true

 },

 ]

 };

 var symbol = new TcHmi.Symbol('%s%PLC1.MAIN.yAxis%/s%');

 var destroySymbol = symbol.watch(function (data) {

 if (data.error === TcHmi.Errors.NONE) {

 // Handle result value...

 data1 = data.value;

 myChart.setOption({

 xAxis: {

 data: Xname

 },

 series: [

 {

 data: data1

 }

 ]

 });

 // console.log(value);

 } else {

 // Handle error...

 }

 // Stop watch inline

 // data.destroy(); // Call the destroy function inline to stop the watch and free resources.

 });

 // intervalId = setInterval(function () {

 // myChart.setOption(option);

 // }, 1000);

 option && myChart.setOption(option);

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