**仪器接口程序说明文档**

1. **接口说明**

|  |  |  |  |
| --- | --- | --- | --- |
| 仪器厂商 | 西门子 | 适用型号 | **1000** |
| 通讯方式 | **单向** | 仪器类型 | 免疫 |
| 医院 | 连云港中医院 | | |
| 程序名称 | [MI.MIFIMMAGE](MI.MIFIMMAGE.txt) | | |
| 附件 | 接口源码（<MI.MIFIMMAGE.txt>） | | |

1. **连接说明**

**连接方式：**串口 ~~串口线接仪器主机/~~串口线接仪器配备电脑

**是否支持其他连接方式**：~~网口，读文本，读数据库~~

**3.串口盒子设定参数**

**1）串口盒子型号及线序**

**MOXA 5410**

RS232 母对母 23交叉5直连

**2）盒子及仪器设定参数**

|  |  |  |  |
| --- | --- | --- | --- |
| 序号 | 选项中文名称 | 选项英文名称 | 设置 |
| 1 | 波特率 | Baud | 9600 |
| 2 | 数据位 | Code | 8 |
| 3 | 停止位 | Stop Bit | 1 |
| 4 | 奇偶校验 | Parity Bit | None |
| 5 | 模式 | Mode | RS232 |
| 6 | 流量控制 | Flow | None |

**4.仪器参数设定说明（保留仪器设置图片存档）**

仪器上设置：见附件

仪器管理设置：

**5.仪器数据传输说明**

1）仪器自动传输结果：支持

2）手工传输结果：支持

**手动传输操作图片**

**6．修改记录**

|  |  |  |  |
| --- | --- | --- | --- |
| 序号 | 日期 | 操作人 | 说明 |
| 1 | 2016-5-25 | 刘彬 |  |

/// 名称: MI.MIFIMMAGE

/// 描述: MIFIMMAGE

/// 通讯方式：双向

/// 编写者:BinL

/// 编写日期: 20170103

MIFIMMAGE(MachID)

s MachID=$g(MachID)

S ^TMPMACH10(MachID,104)=$H

i '$l(MachID) q

s ItemDeli=$li(^dbo.BTMIMachineParameterD(MachID),12) //项目分隔符

s ResultDeli=$li(^dbo.BTMIMachineParameterD(MachID),13) //结果分隔符

s AntDeli=$li(^dbo.BTMIMachineParameterD(MachID),14) //抗生素分隔符

s SenDeli=$li(^dbo.BTMIMachineParameterD(MachID),15) //药敏结果分隔符

s Port="|TCP|"\_$li(^dbo.BTMIMachineParameterD(MachID),17) //端口号

//控制字符

s stx=$c(2),etx=$c(3),ack=$c(6),enq=$c(5),eot=$c(4),lf=$c(10),cr=$c(13),nak=$c(21),etb=$c(23)

//s stx="[",etx="]"

S ^TMPMACH10(MachID,102)=$H

SET $ZTRAP="ErrHandler",iError=0

i $$Start^MI.MIF000(MachID) q

f d Main i $$Stop^MI.MIF000(MachID) q

c Port

q

ErrHandler

s iError=+$g(iError)+1

i iError>100 s ret=$$Stop^MI.MIF000(MachID) q

d Trace^MI.MIF000(MachID,$tr($ZERROR,"^","--")\_".错误代码:"\_$ECODE,"Runtime Error")

h 10

q

///结果采集和数据分解

Main

r \*R:10 e d q

.d ORDER

i $c(R)'=enq q

d Trace^MI.MIF000(MachID,"ENQ","H<--M")

d ACK

s (Epis,Result,Date,Time,QC)=""

f r \*R:10 q:$c(R)=eot q:R=-1 d

.i $c(R)'=stx q

.s Record=$$Read^MI.MIF000(MachID,"",lf) q:'$l(Record)

.d Trace^MI.MIF000(MachID,Record,"H<--M")

.d ACK

.i $e(Record,2)="Q" d q

..//询问信息

..s QEpis=$p($p(Record,"|",3),"^",2)

..S ^TMPQUERY(MachID,1)=QEpis

..//s retVal=$$ReceiveLabno^MI.MIF000(MachID,QEpis,"")

..i retVal'=1 Quit

..i $l(QEpis) s ^TMP($zn,$j,"ENQ",QEpis)=""

.i $e(Record,2)="H" d q

..//结果头信息

..d Last s (Epis,Result,Date,Time,QC,ResF)=""

.i $e(Record,2)="P" d q

..//病人信息

.i $e(Record,2)="O" d q

..s Epis=$tr($p($p(Record,"|",3),"^",1)," ")

..s QC=$tr($p(Record,"|",12)," ")

..s:'$l(Epis) Epis=$tr($p($p(Record,"|",4),"^",1)," ")

..//判断是否是质控编号

..//s QC=$$findQC^MIF000(mi,epis)

.i $e(Record,2)="R" d q

..//结果信息

..s Chl=$tr($p($p(Record,"|",3),"^",4)," ")

..//s Chl=$tr($p($p($p(Record,"|",3),"^",5),"\_",1)," ")

..//i '$l(Chl) s Chl=$tr($p($p($p(Record,"|",3),"^",5),"\_",2)," ""/")

..s ResStus=$tr($p($p(Record,"|",3),"^",11)," ")

..s Res=$tr($p(Record,"|",4)," ")

..s ResF=$tr($p(Record,"|",6)," ")

..i $l(ResF) s Res=ResF\_Res

..s ResF=""

..//i ResStus="F" d q //判断结果状态

..i $l(Chl),$l(Res) s Result=Result\_Chl\_ResultDeli\_Res\_ItemDeli

.i $e(Record,2)="L" d Last q

d Trace^MI.MIF000(MachID,$s($c(R)=eot:"EOT",1:R),"H<--M")

d ORDER

q

///保存结果

Last ; file result if exist

i $l(Epis),$l(Result) d Save^MI.MIF000(MachID,Epis,Result,Date,Time,QC)

q

///上传项目

ORDER

s ^TMPQUERY(MachID,2)=$d(^TMP($zn,$j))

i '$d(^TMP($zn,$j)) q

s Epis="" f s Epis=$o(^TMP($zn,$j,"ENQ",Epis)) q:Epis="" d

.d ScanOne^MI.MIF000(MachID,Epis)

.d PATDET(Epis)

.s (TCx,TCxH,TCx2,TCx3)="",Episx=Epis

.s chl="" f s chl=$o(^TMP("MIFTESTCODE",$j,MachID,Epis,chl)) q:chl="" d

..s TCx=TCx\_"^^^"\_chl\_"\"

.s TCx=$e(TCx,1,$l(TCx)-1)

.s ChlLen=$l(TCx,"\")

.s ChlFlag=""

.i ChlLen<20 s ChlFlag="N"

.i ChlLen>20 d

..s ChlFlag="A",(TCx1,TCx2)=""

..f i=1:1:20 d

...s TCx1=TCx1\_$p(TCx,"\",i)\_"\"

..f i=21:1:ChlLen d

...s TCxH=TCxH\_$p(TCx,"\",i)\_"\"

...s ChlLen2=$l(TCxH,"\")

..i ChlLen2<20 s TCx2=TCxH

..i ChlLen2>20 d

...f n=1:1:20 d

....s TCx2=TCx2\_$p(TCxH,"\",n)\_"\"

...f n=21:1:ChlLen d

....s TCx3=TCx3\_$p(TCxH,"\",n)\_"\"

..s TCx1=$e(TCx1,1,$l(TCx1))

..i $l(TCx3) d

...s TCx2=$e(TCx2,1,$l(TCx2))

...s TCx3=$e(TCx3,1,$l(TCx3)-1)

..e d

...s TCx2=$e(TCx2,1,$l(TCx2)-1)

.s ^TMPQUERY(MachID,3)=TCx

.i ChlFlag="N" d

..i $L(TCx) d

...s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="O|1|"\_Episx\_"||"\_TCx\_"|||||||N||||||||||||||Q"

...s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="L|1|F"

..e d

...s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="Q|1|^"\_Epis\_"||^^^ALL||||||||X"

.i ChlFlag="A" d

..s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="O|1|"\_Episx\_"||"\_TCx1

..i $l(TCx3) d

...s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="T"\_TCx2

...s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="B"\_TCx3\_"|||||||N||||||||||||||Q"

..e d

...s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="A"\_TCx2\_"|||||||N||||||||||||||Q"

..s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="L|1|F"

..//s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="H|\^&|||LABTRAK|||||||P|1"

.//e d

.//.s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="Q|1|^"\_Epis\_"||^^^ALL||||||||X"

k ^TMP($zn,$j,"ENQ")

q:'$d(^TMPTMIF(MachID,22))

m ^TMPQUERY(MachID,4)=^TMPTMIF(MachID,22)

i ChlFlag="N" d Send

i ChlFlag="A" d Send1

k ^TMPTMIF(MachID,22)

q

///病人基本信息

PATDET(Epis) ; set patient details record

s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="P|1||||^||||||||"

q

///发送检测项目

Send

w enq,\*-3 d Trace^MI.MIF000(MachID,"ENQ","H-->M")

f j=1:1:10 r \*R:1 i $c(R)=ack!($c(R)=enq) q

d Trace^MI.MIF000(MachID,$s($c(R)=ack:"ACK",$c(R)=enq:"ENQ",$c(R)=nak:"NAK",1:R),"H<--M")

i $c(R)=enq q

i $c(R)'=ack w eot,\*-3 d Trace^MI.MIF000(MachID,"EOT","H-->M") q

q:$$SEND("1H|\^&|||LABTRAK|||||||P|1")

s x="" f FRAME=2:1 s x=$O(^TMPTMIF(MachID,22,x)) q:x="" q:$$SEND(FRAME#8\_^TMPTMIF(MachID,22,x))

w eot,\*-3 d Trace^MI.MIF000(MachID,"EOT","H-->M")

k ^TMPTMIF(MachID,22)

q

Send1

w enq,\*-3 d Trace^MI.MIF000(MachID,"ENQ","H-->M")

f j=1:1:10 r \*R:1 i $c(R)=ack!($c(R)=enq) q

d Trace^MI.MIF000(MachID,$s($c(R)=ack:"ACK",$c(R)=enq:"ENQ",$c(R)=nak:"NAK",1:R),"H<--M")

i $c(R)=enq q

i $c(R)'=ack w eot,\*-3 d Trace^MI.MIF000(MachID,"EOT","H-->M") q

q:$$SEND1("1H|\^&|||LABTRAK|||||||P|1")

s x="" f FRAME=2:1 s x=$O(^TMPTMIF(MachID,22,x)) q:x="" q:$$SEND1(FRAME#8\_^TMPTMIF(MachID,22,x))

w eot,\*-3 d Trace^MI.MIF000(MachID,"EOT","H-->M")

k ^TMPTMIF(MachID,22)

q

SEND1(str)

i ($e(str,1,3)["O")||($e(str,1,3)["T")||($e(str,1,3)["B")||($e(str,1,3)["A") d

.i $e(str,1,3)["O" s str=str\_etb

.i $e(str,1,3)["T" s str=$tr(str,"T"),str=str\_etb

.i $e(str,1,3)["A" s str=$tr(str,"A"),str=str\_etx

.i $e(str,1,3)["B" s str=$tr(str,"B"),str=str\_etx

e d

.s str=str\_etx

s chsum=$$CHSUM(str)

w stx,str,chsum,cr,lf,\*-3 d Trace^MI.MIF000(MachID,str\_chsum\_cr\_lf,"H-->M")

f j=1:1:6 r \*R:1 i ($c(R)=ack)!($c(R)=eot) q

i $c(R)=ack d Trace^MI.MIF000(MachID,"ACK","H<--M") q 0

i $c(R)=eot d Trace^MI.MIF000(MachID,"EOT","H<--M") q 0

d Trace^MI.MIF000(MachID,R,"H<--M")

q 1

SEND(str)

s str=str\_cr\_etx,chsum=$$CHSUM(str)

w stx,str,chsum,cr,lf,\*-3 d Trace^MI.MIF000(MachID,str\_chsum,"H-->M")

f j=1:1:6 r \*R:1 i ($c(R)=ack)!($c(R)=eot) q

i $c(R)=ack d Trace^MI.MIF000(MachID,"ACK","H<--M") q 0

i $c(R)=eot d Trace^MI.MIF000(MachID,"EOT","H<--M") q 0

d Trace^MI.MIF000(MachID,R,"H<--M")

q 1

///生成校验码

CHSUM(x)

n (x) s z=0 f y=1:1:$l(x) s z=z+$a(x,y)

s z=$e("0123456789ABCDEF",z#256\16+1)\_$e("0123456789ABCDEF",z#16+1)

q z

///发送回应符到仪器

ACK

h 0.5

w ack,\*-3 d Trace^MI.MIF000(MachID,"ACK","H-->M")

q