**仪器接口程序说明文档**

1. **接口说明**

|  |  |  |  |
| --- | --- | --- | --- |
| 仪器厂商 | 梅里埃 | 适用型号 | **VITEK2** |
| 通讯方式 | 单向 | 仪器类型 | 微生物 |
| 医院 | 阳光融和医院 | | |
| 程序名称 | MI.MIFVITEK2 | | |
| 附件 | 接口源码（MI.MIFVITEK2.txt） | | |

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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 |

1. **仪器参数设定说明（保留仪器设置图片存档）**

仪器上设置：见附件文件夹（通道号及仪器设置图片）

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 需键入标本号，选择查询日期，选中计算机与分发报告后点击开始**

**6．修改记录**

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

1. **数据格式：**

**8.接口程序**

**// 名称: MI.MIFVITEK2**

**/// 描述: MIFVITEK2仪器接口**

**/// 通讯方式：**

**/// 编写者:BinL**

**/// 编写日期: 20160305**

**///**

**MIFVITEK2(MachID) ; ASTM protocol - VITEK (Bi-Directional)**

**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92**

**s ResultDeli=$li(^dbo.BTMIMachineParameterD(MachID),13) //结果分隔符44**

**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 del="|" //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**

**Main**

**r \*R:10 e d q**

**.d BUILD ;ORDER**

**i $c(R)=enq d**

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

**.d ACK s enqcnt=""**

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

**..i $c(R)'=stx q**

**..s record=$$Read^MI.MIF000(MachID,"",$c(29)) q:'$l(record)**

**..d ACK**

**..;s record=$e(record,1,$l(record)-1)**

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

**..i $l(record,etb)>1 s AllRecord=AllRecord\_$p($e(record,2,$l(record)-1),etb,1)**

**..i $l(record,etx)>1 s AllRecord=AllRecord\_$p($e(record,2,$l(record)-1),etx,1)**

**..s AllRecord=record**

**..d Result**

**..; ; check record validity**

**..;s chsum=$p(record,etx,2),chrecord=$p(record,etx,1)\_etx**

**..;i $$CHSUM(chrecord)'=chsum d q**

**..;w nak,\*-3 d Trace^MI.MIF000(MachID,"NAK - Incorrect Checksum","H-->M")**

**..;d ACK**

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

**q**

**Result**

**s num=$o(^aaVITEK07(""),-1)+1**

**s ^aaVITEK07(num)=AllRecord**

**s (ORG,xANT,xMIC,xRES,ANTSTR)=""**

**s (sample,epis,surname,result,date,time,QC)=""**

**s isolate=1**

**s AllRecord=$tr(AllRecord,$c(30))**

**f k=1:1:$l(AllRecord,"zz")-1 d**

**.s recstr=$p(AllRecord,"zz",k)**

**.f i=1:1:$l(recstr,del) d**

**..s fldstr=$p(recstr,del,i)**

**..i $e(fldstr,1,2)="ci" d q ///epis**

**...;d Last**

**...s (sample,epis,surname,result,date,time,QC)=""**

**...s epis=$e(fldstr,3,$l(fldstr))**

**...s epis=$p(epis,"-",1)**

**...;i $l(epis)<9 s epis=$tr($j(epis,9)," ","0")**

**..i $e(fldstr,1,2)="t1" d q ///isolate NO**

**...s isolate=$e(fldstr,3,$l(fldstr))**

**...i '$l(isolate) s isolate=1**

**..i $e(fldstr,1,2)="o1" d q ///org**

**...i $l(ORG) s result=result\_ORG\_ResultDeli\_ANTSTR\_ResultDeli\_isolate\_ItemDeli**

**...s (ORG,xANT,xMIC,xRES,ANTSTR)=""**

**...s ORG=$e(fldstr,3,$l(fldstr))**

**...s ORG=##Class(OTH.SYSParameter).MIUPPER(ORG)**

**...d Last**

**..i $e(fldstr,1,2)="a1" d q ///ant**

**...s xANT=$e(fldstr,3,$l(fldstr))**

**..i $e(fldstr,1,2)="a2" d q ///mic**

**...s xMIC=$p(fldstr,"a3",2)**

**...i xMIC="Pos" s xMIC="+"**

**...i xMIC="Neg" s xMIC="-"**

**..i $e(fldstr,1,2)="a3" d q ///mic**

**...s xMIC=$e(fldstr,3,$l(fldstr))**

**...i xMIC="Pos" s xMIC="+"**

**...i xMIC="Neg" s xMIC="-"**

**..i $e(fldstr,1,2)="a4" d q ///res**

**...s xRES=$e(fldstr,3,$l(fldstr))**

**...i xRES="+" s xRES="P"**

**...i xRES="-" s xRES="N"**

**...i $l(xANT),$l(xRES) s ANTSTR=ANTSTR\_xANT\_SenDeli\_xRES\_SenDeli\_xMIC\_SenDeli\_AntDeli**

**.i $l(ORG) s result=result\_ORG\_ResultDeli\_ANTSTR\_ResultDeli\_isolate\_ItemDeli**

**.d Last**

**.;i $e(record,1)="L" d Last**

**i $l(AllRecord) s AllRecord=$p(AllRecord,"zz",$l(AllRecord,"zz"))**

**q**

**Last ; file result if exist**

**;i $l(epis),$l(result) d file^MIF000(mi,sample,epis,surname,result,date,time,QC)**

**S epis=epis**

**s ESBLs=0**

**i $l(ORG),$l(epis) d Save^MI.MIF000(MachID,epis,isolate\_ResultDeli\_ORG\_ItemDeli\_"ESBLs"\_ResultDeli\_ESBLs\_ItemDeli,date,time,QC)**

**;d SaveAnt^MI.MIF000(MachID,"",epis,surname,isolate\_ResultDeli\_ORG\_ItemDeli\_"ESBLs"\_ResultDeli\_ESBLs\_ItemDeli,date,time,QC)**

**;.d Save^MI.MIF000(MachID,epis,isolate\_ResultDeli\_ORG\_ItemDeli\_"ESBLs"\_ResultDeli\_ESBLs\_ItemDeli,date,time,QC)**

**i $l(epis),$l(result) d**

**.S ^DEBUG($zn,$j,"SAVE")=epis\_"#"\_result**

**.d SaveAnt^MI.MIF000(MachID,epis,result,date,time,"Y")**

**;s (sample,epis,surname,result,date,time,QC)=""**

**q**

**CHSUM(x) ; calculate check sum**

**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**

**ACK ; send 'ack' to instrument**

**;h 1**

**w ack,\*-3**

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

**q**

**BUILD ;ORDER LIST ^TMP($zn,$j,"ENQ",epis**

**;m ^aai200(1)=^TMP($zn,$j)**

**i '$d(^TMP($zn)) q**

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

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

**.s ^aacenter(3)=MachID\_":"\_labno**

**.d ScanOne^MI.MIF000(MachID,labno) ;^TMP("MIF-SINGLE",208912,"AH7471","A611071030",1)=**

**.m ^aacenter(4)=^TMP("MIFTESTCODE",$j)**

**.d PATDET(labno)**

**.s tcx="",episx=labno**

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

**..s tcx=tcx\_"^^^"\_$p(chl,"\_",1)\_"\"**

**.i $l(tcx) s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="O|1|"\_episx\_"||"\_tcx\_"|||||||N||||||||||||||Q"**

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

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

**.i '$l(tcx) s line=$o(^TMPTMIF(MachID,22,""),-1)+1,^TMPTMIF(MachID,22,line)="Q|1|^"\_episx\_"||^^^ALL||||||||X"**

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

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

**d Send k ^TMPTMIF(MachID,22)**

**q**

**PATDET(epis) ; set patient details record**

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

**q**

**Send ; send list of orders if exists**

**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 sk=""**

**s sk=$o(^TMPTMIF(MachID,22,sk),-1)**

**k ^TMPTMIF(MachID,22,sk)**

**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)**

**k ^TMPTMIF(MachID,10)**

**q**

**SEND(str) ; send string to instrument**

**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**

**upload**

**s cr=$c(13)**

**s AllRecord="H|\^&|||NG\_LIS|||||LIS\_ID||P|1"\_$C(13)\_"Q|1|^12206|^12206|ALL||||||||O"\_$C(13)\_"L|1"\_$C(13,3)\_"A"**

**i $l(AllRecord) d**

**.s (sample,epis,surname,rec,res,result,date,time,QC)=""**

**.f k=1:1:$l(AllRecord,cr) d**

**..s record=$p(AllRecord,cr,k)**

**..w !,record**

**..i $e(record,1)="Q" d q**

**...b**

**...s epis=$p($p(record,"|",3),"^",2) i $e(epis)="0" s epis=$e(epis,2,99),zero=1**

**...i $l(epis),$d(^TEPI(epis,1)) s ^TMP($zn,$j,"ENQ",epis)=zero**

**q**

**TESTT**

**s del="|",par27=91,par28=93,par10=92,par11=44**

**s AllRecord="mtrsl|pi20080910|si|ci6138|c01|ctauto|rtast-p536|rnGram Positive Susceptibility - AST-P536|rr1|t2SU|o1staaur|o2Staphylococcus aureus|a1amc|a2Amoxicillin/CA|a3|a4S|a1am|a2Ampicillin|a3|a4R|a1ams|a2Ampicillin/sulbactam|a3|a4S|a1ccl|a2Cefaclor"**

**s AllRecord=AllRecord\_"|a3|a4S|a1tax|a2Cefotaxime|a3|a4S|a1ctr|a2Ceftriaxone|a3|a4S|a1rox|a2Cefuroxime - Sodium|a3|a4S|a1cip|a2Ciprofloxacin|a3<=0.5|a4S|a1cc|a2Clindamycin|a3>=8|a4R|a1e|a2Erythromycin|a3>=8|a4R|a1fos|a2Fosfomycin|a3<=8|a4S|a1fa|a2Fusidic Acid|a3<"**

**s AllRecord=AllRecord\_"=0.5|a4S|a1gm|a2Gentamicin|a3>=16|a4R|a1imi|a2Imipenem|a3|a4S|a1nor|a2Norfloxacin|a31|a4S|a1ox|a2Oxacillin|a30.5|a4S|a1peng|a2Penicillin-G|a3>=0.5|a4R|a1rif|a2Rifampin|a3<=0.5|a4S|a1tpn|a2Teicoplanin|a3<=0.5|a4S|a1tet|a2Tetracycline|a3<=1|a"**

**s AllRecord=AllRecord\_"4S|a1tob|a2Tobramycin|a38|a4I|a1sxt|a2Trimethoprim/Sulfa|a3160|a4R|a1va|a2Vancomycin|a3<=1|a4S|a1lev|a2Levofloxacin|a30.25|a4S|a1azt|a2Azithromycin|a3|a4R|a1clr|a2Clarithromycin|a3|a4R|a1oxs|a2Oxacillin Screen|a3|a4S|a1qda|a2Quinupristin/Da"**

**s AllRecord=AllRecord\_"lfopristin|a3<=0.25|a4S|a1ftn|a2Nitrofurantoin|a3<=16|a4S|a1lnz|a2Linezolid|a32|a4S|a1mxf|a2Moxifloxacin|a3<=0.25|a4S|zz|"**

**s (ORG,xANT,xMIC,xRES,ANTSTR)=""**

**s (sample,epis,surname,result,date,time,QC)=""**

**f k=1:1:$l(AllRecord,"zz")-1 d**

**.s recstr=$p(AllRecord,"zz",k)**

**.f i=1:1:$l(recstr,del) d**

**..s fldstr=$p(recstr,del,i)**

**..i $e(fldstr,1,2)="ci" d q ///epis**

**...d Last**

**...s (sample,epis,surname,result,date,time,QC)=""**

**...s epis=$e(fldstr,3,$l(fldstr))**

**..i $e(fldstr,1,2)="o1" d q ///org**

**...i $l(ORG) s result=result\_ORG\_$c(par10)\_ANTSTR\_$c(par11)**

**...s (ORG,xANT,xMIC,xRES,ANTSTR)=""**

**...s ORG=$e(fldstr,3,$l(fldstr))**

**..i $e(fldstr,1,2)="a1" d q ///ant**

**...s xANT=$e(fldstr,3,$l(fldstr))**

**..i $e(fldstr,1,2)="a3" d q ///mic**

**...s xMIC=$e(fldstr,3,$l(fldstr))**

**..i $e(fldstr,1,2)="a4" d q ///res**

**...s xRES=$e(fldstr,3,$l(fldstr))**

**...;b 10**

**...i $l(xANT),$l(xRES) s ANTSTR=ANTSTR\_xANT\_$c(par28)\_xRES\_$c(par28)\_xMIC\_$c(par27)**

**...;b 20**

**.i $l(ORG) s result=result\_ORG\_$c(par10)\_ANTSTR\_$c(par11)**

**.d Last**

**.;i $e(record,1)="L" d Last**

**i $l(AllRecord) s AllRecord=$p(AllRecord,"zz",$l(AllRecord,"zz"))**

**q**