TSJ-1A+

AUTOMATIC TISSUE PROCESSOR

USER MANUAL

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CONTENTS

I. 【Brief introduction】

TSJ-1A+ automatic tissue processor is an equipment that perform fixing, dehydrating, transparency and wax immersing treatment for tissue of human beings, animals or plants. It's widely applied in pathologic departments of various hospitals, pathologic teaching offices of various medical colleges and universities, animal and plant scientific research institute and food inspection department. TSJ-1A+ tissue processor has following feature:

1.Microcomputer controlling of the whole operating process so as to ensure operating convenience and working stability;

2.Tissue basket relocating controlling perch enabling the tissue to be put in any jar;

3.Electricity protection and obstacle protection functions;

4.Agitation dehydrate mode to guarantee the complete mix and contact with the tissue, solvent and paraffin so as to achieve good dehydrate effect.

5. Large LCD screen showing every step of processing and easy for monitoring.

6. Timing: delay timing max 99 day 99 hour 59 min

       jar process timing max 99 hour 59 min

       timing increment: 1 min

7. Constant temperature controlling system adopted on the paraffin jar to ensure high precision of temperature controlling, nonstick TEFLON coating painted on the internal surface that provide the good condition for tissue protection.

8. There are 8 programs selectable.

9. Battery backup for 8 hours except the paraffin jar.

10. Adopted with electric lock and password for specific person use.

Please read this "User Manual" carefully before operation, and please properly keep the manual.

II.【Function】

Fig 1　Main part and function

Main part and function of TSJ-1A+ automatic tissue processor as following:

1. Obstacle detector

It's in the jar position just ahead of that of the tissue basket. If any obstacles (e.g. the paraffin in the paraffin jar hasn't melted) is met during changing relocating tissue basket into another jar, the obstacle detector will be lifted and generate fault signals. An alarm and warning of "POWER FAILURE!" will be shown.

2. Reposition control lever

When the tissue basket is lifted up, pull out the reposition control lever by your hand. The top cover and the tissue basket then can be manually pulled to another jar position.

Notice: After pull the tissue basket to the corresponding jar position, please put the lever into the locating slot insure the exact positioning.

3. Paraffin jar

The paraffin jar is an automatic constant temperature controlling system with temperature controlling accuracy of ± 5℃. It is preset to be 70℃. During heating the red indicator

lights up while the state indicator lights up when the jar is powered off. The tuning knob above the indicator is temperature tuning knob. The temperature will get higher when tuning it clockwise and vice versa. It is recommended not to tune it if there is no special temperature requirement.

4. Control panel

It is used to set operating parameters, display the processing data and control working state of the equipment.

5. Big Carousel

There are 12 group of screws on the Big carousel, and there are 4 screws as a group that fix the position for each reagent jar and paraffin jar. The position of each jar shown below. The 10th , 11th , 12th are paraffin jar. There is a hole on the position of paraffin jar that can hide the cable and not be visible to the user when he look from the front part.
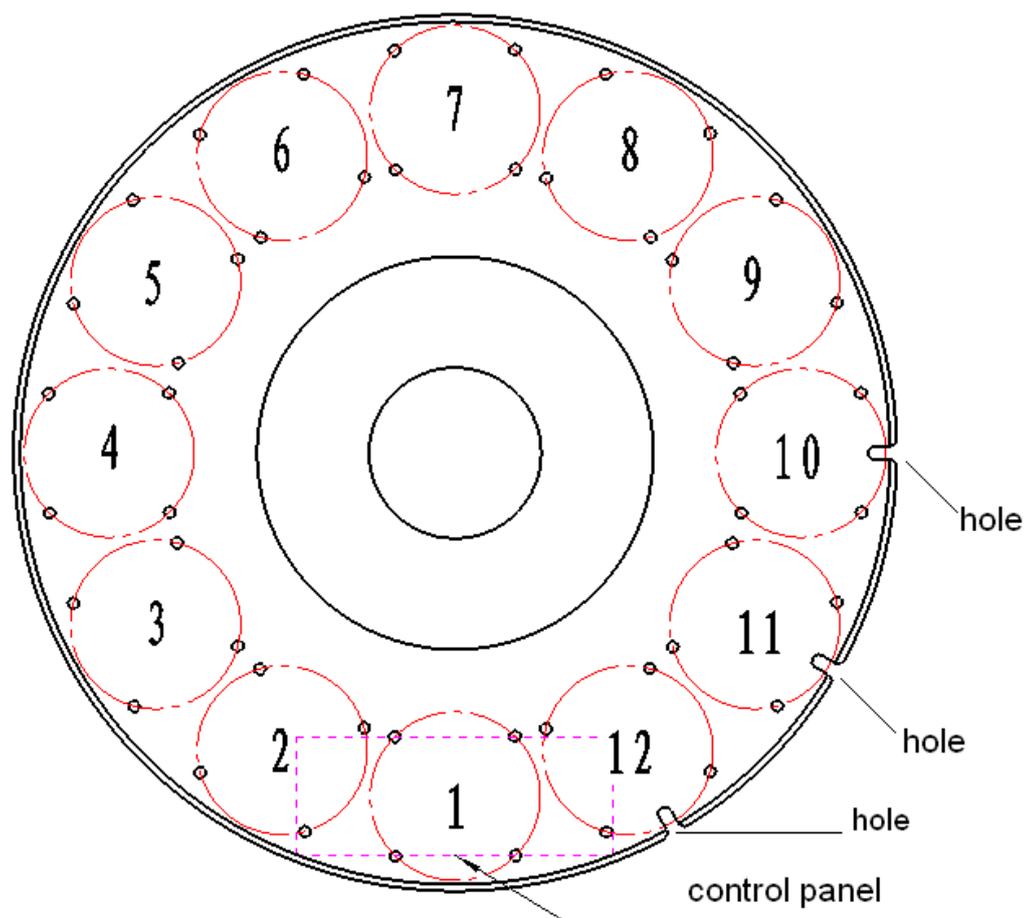

Fig 2   Jar position

III.【Control panel】

1. Start up interface:

After starting up the equipment, it requires password setting:

```
↑   ■                2011-01-29 14:00:00


Password：？？？？？？
```
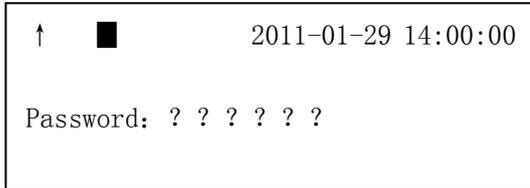
Here " ↑ " for main VAC power supply, here " ■ " for battery VDC power supply, when the equipment connect to main VAC power supply, the " ↑ " and " ■ " all light up, when the equipment is backup with battery power supply, the " ■ " light up, but the " ↑ " will display " X ".

Pressing: Set→Pause→Auto→Manual→Ok→↑

Password:

　*　*　*　*　*　*

If the password is wrong, it will display "reload" at the right corner, follow the sequence Set→Pause→Auto→Manul→Ok→↑ to reload your password. After inputting the correct password, it will go to "waiting operation" interface.

Notice: Set→Pause→Auto→Manual→Ok→↑

2. Interface（waiting operation）

```
↑   ■                2011-01-29 14:00:00

      Waiting operation...
```
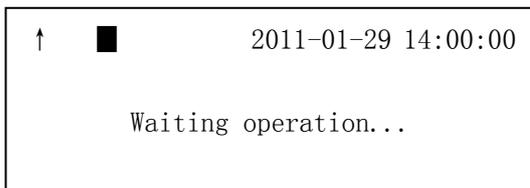
In the main interface, user can choose the manual mode, press "manual" and operate the system manually, tissue basket will go to jar by jar, user can press "pause" to stop the running of tissue basket. In the automatic mode, the "manual" and "pause" will deactivated during the system running.

If user want to stop the system running in automatic mode, please lift the obstacle detector, the system will run into the interface of obstacle process, it display below:

3

```
↑   ■              2011-01-29 14:00:00


 Obstale error! please return

```
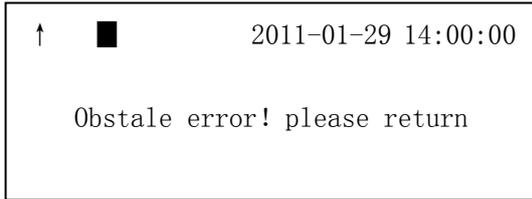
Here please press "return" back to main interface.

3. Setting interface:

In the main interface, press "set" and go to setting interface below:

```
↑   ■              2011-01-29 14:00:00
 Set
                Delaytime
                Programme
                Shortcutkey
                Date/time
```
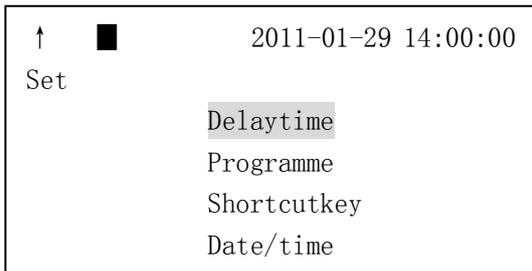
Press ↑ or ↓ to choose the item, press "ok" and go to the setting of each item, after setting, press "return" back to previous menu. The default setting of delay time is 2 hours, user can set the data specifically.

① Delay time setting:

```
↑   ■              2011-01-29 14:00:00
 Set →Delaytime←Auto Manual→


            00-00-00
```
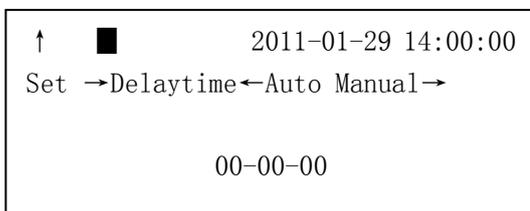
Here "Auto" is ←, "Manual" is →, press ↑ or ↓ adjust the value, according to day - hour – minute, user can set the value as they need, system will run delay according to the setting. For example:

```
↑   ■              2011-01-29 14:00:00
 Set →Delaytime←Auto Manual→


            01-12-30
```
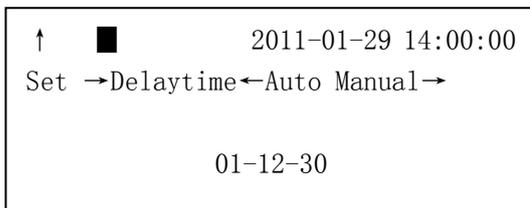
Here the system will run after 1 day 12 hour and 30 minute, after setting, press "return" back to previous menu.

② Programme setting

```
↑   ■              2011-01-29 14:00:00
Set →programme←Auto Manual→


            Programme 01
            Index    01
            Vat      01
            Time  00：00
        Pagedown←P3  P4→ Pageup
```

For example:

        Programme 01：

        Step 01：

        Jar：01

        Process time：01：00（hour ： minute）

It means the step 01 of programme 01 requires the process time of 1 hour in the jar 01, press "ok" to confirm the setting, "ok" will display in the right corner means the setting is complete. In this way, user can set each step from 1 to 12. Here the last step must set as step 12, jar 12:

        Programme 01：

        Step 12：

        Jar：12（must be 12）

        Process time：01：00（hhh ： mmm）

After setting, user can press "P3" or "P4" to review the data of each programme stored, press "return" back to the previous menu.

    ③ Shortcut setting:

```
↑   ■              2011-01-29 14:00:00
Set →shortcutkey←Auto Manual→


            Key P1→Prog 01
```

Here "Auto" is ←, "Manual" is →, press ↑ or ↓ adjust the value, "P1" is programme 01, "P2" is programme 02, press "ok" to confirm the setting, "ok" will display in the right corner means the setting is complete. Press "return" back to previous menu.

④ Date and time setting:

```
↑  ■      2011-01-29 14:00:00
Set →Date/Time ←Auto Manual→


          00-00-00
          00:00:00
```

00-00-0 is   yyy-mmm-ddd

00: 00: 00   is   hhh-mmm-ssss

Here "Auto" is ←, "Manual" is →, press ↑ or ↓ adjust the value of date and time, after setting, press "ok" to confirm the setting, "ok" will display in the right corner means the setting is complete. Press "return" back to previous menu.

4. Initial jar position setting:

```
↑    ■           2011-01-29 14:00:00
           Input  vat 02
```

Notice: the one near the obstacle detector is tissue basket No. 1, tissue basket No.1 is in the initial jar.

First lift the top cover manually（press "manual" in the main menu）, pull the reposition control lever and put the tissue basket No.1 into the initial jar expected, please make sure the lever go into the locating slot exactly.

Press ↑ or ↓ to position the initial jar, press "ok" to confirm the setting, "ok" will display in the right corner means the setting is complete. Press "return" back to previous menu.

5. Automatic mode:

```
↑   ■          2011-01-29 14:00:00
Running        Auto
Prog   01      vat  01
Vat  count  down  01: 00
Total count  down  00: 14: 00
Delay count  down  00: 00: 01
```

Here "AUTO" is automatic mode.

Prog　01　　vat　01

System running the programme 01, current running jar is 01.

Vat　count　down　01：00

The process time of jar 01 still has 1 hour left.（00（hhh）:00（mmm））

Total count　down　00：14：00

The process time of programme 01 still has 14 hours left.（00（hhh）:00（mmm））

Delay count　down　00：00：01

The delay time is 1 minute, that means the system will run after 1 minute.

Above timing will count down during the system running.

6. Ending interface:

```
↑    ■           2011-01-29 14:00:00


     Finish! please return
```
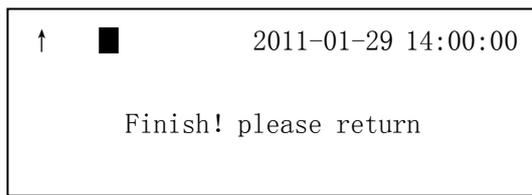
Here the programme running complete, press "return" back to the main menu.

In the automatic mode, the system will count down the delay time first, after count down or/and if the delay time is 0, the system will run the initial jar and according to the programme setting, the system will run jar by jar till to the jar 12.

IV. 【Operation】

（I）: Preparation

1、Plug in the cable of paraffin jar（don't plug in or off the cable when the equipment is switch on）, connect 3 paraffin jars with the cable（fig.3）, plug the cable in the socket respectively on the right side of equipment（fig.4）, paraffin jar place in the specific position where the hole located in the carousel.（paraffin jar default is 10、11、12）, tighten up the nut of the cable, make sure the cable is connected firmly, then switch on the equipment.

Fig.3 cable of paraffin jar

Fig.4 socket for paraffin jar

2、Go into the gear 2（Fig.5）, turn the power key to left（Fig.5）, turn on the power supply（1 is on，0 is off）.

Fig.5 power switch

3、Add some reagent into the reagent jar and add 2/3 capacity of paraffin into the paraffin jar.（make sure the melted paraffin will beyond 2/3 capacity of paraffin jar）.

4、Press "manual", "pause" and lift up the tissue basket, place the reagent jar in the position from No.1 to No. 9, place the paraffin jar in the position from No.10 to No.12. (according to the request of tissue processing)

5、Choosing the tissue basket, there are 2 types of tissue basket available. One is copper double layer tissue basket which is suitable for loading the small piece of specimen, one is cylinder tissue basket which is suitable for loading the cassette specimen. User can choose the tissue basket according to their need. When the quantity of specimen is more, user can choose the programme for running 2 tissue baskets at the same time. when the quantity of specimen is less, user can choose the programme for running

single tissue basket. Here we provide the programmes for both of running 2 tissue baskets and single tissue basket.

（II）、Data setting:

According to the timing of Appendix 1, delay time is 2 hours:

（1）Go to the main menu:

（2）Delay setting:

Press "set" and select "delaytime":

Press "ok" and set the data.

```
↑    ■              2011-01-29 14:00:00
Set →Delaytime←Auto Manual→


          00-00-00
```

Here "Auto" is ←, "Manual" is →, press ↑ or ↓ adjust the delay time. For example:

```
↑    ■              2011-01-29 14:00:00
Set →Delaytime←Auto Manual→


          01-12-30
```

Here the system will run after 1 day（24 hours）12 hours 30 minutes, then press "ok" to confirm the setting, "ok" will display in the right corner means the setting is complete. Press "return" back to previous menu.

（III）、Programme setting:

Select "programme" and press "ok" to programme setting, LCD show below:

```
↑    ■              2011-01-29 14:00:00
Set →programme←Auto Manual→


        Programme 01
        Index    01
        Vat      01
        Time  00：00
    Pagedown←P3  P4→ Pageup
```

Here "Auto" is ←, "Manual" is →, press ↑ or ↓ to adjust the timing of each jar, press "ok" to confirm the setting of each jar, the "ok" will display in the right corner means the setting is complete. after the setting from jar 01 to jar 12. Press "P3" or "P4" to review the programme setting. Press "return" back to previous menu.

Attention: the system have stored the programme 01 for using the 2 tissue baskets, and stored the programme 02 for using the single tissue basket for user reference. User can change the data according to their specific need.

（IV）、Shortcut setting:

User can set the shortcut key for common use of 4 programmes as P1 – P4 for easy and convenient operation. The system has set the shortcut key of P1 – P4 as the corresponding programme 01-04, user can change it or set the shortcut key according to the specific need.

（V）、Date and time setting:

First time running the system, user can set the current date and time according to Greenwich. After setting, press "return" back to main menu.

If user want to run the programme 01, and the shortcut key "P1" is for programme 01, then press "P1", system will display the interface for initial jar position setting, here user need to input the jar No. for positioning initial jar, when running the 2 tissue baskets, the initial jar shall be jar 02, if user don't like jar 02 as the initial jar, but jar 05, then input the jar No.5 as the initial jar, and pull the tissue basket No.1 into the jar 05 manually.

Attention: Tissue basket No.1 must in the initial jar when the system start running, Otherwise the tissue basket will go into the jars not accordance with the programme setting.

（VI）、Automatic mode：

After the programme setting, press "ok" and run the programme 01 for running the 2 tissue baskets.

1）Programme 01 for running the 2 tissue baskets:

In the main menu, press "P1" and the system go to initial jar position setting:

```
┌──────────────────────────────────────┐
│ ↑   ■           2011-01-29 14:00:00  │
│         Input  vat 02                │
│                                      │
│                                      │
└──────────────────────────────────────┘
```
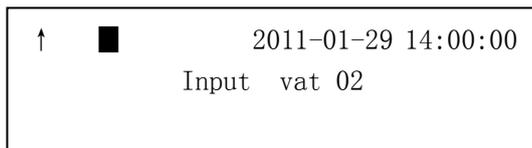
Set the initial jar as the jar 02.

Attention: when running 2 tissue baskets, the initial jar must be set, and the tissue basket No.1 must in the initial jar.

The system will count down the delay time, after 1 day 12 hours and 30 minutes the system run from the initial jar (jar 02) to the end jar 12. LCD will display the ending interface.

2）Programme 02 for running the single tissue basket:

In the main menu, press "P2" and the system go to initial jar position setting:

```
┌──────────────────────────────────────┐
│ ↑   ■           2011-01-29 14:00:00  │
│         Input  vat 01                │
│                                      │
│                                      │
└──────────────────────────────────────┘
```
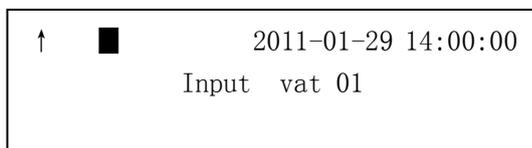
Set the initial jar as the jar 01.

Attention: when running single tissue basket, the initial jar must be set, and the tissue basket must in the initial jar.

The system will count down the delay time, after 1 day 12 hours and 30 minutes the system run from the initial jar (jar 01) to the end jar 12. LCD will display the ending interface.

（VII）、 Take out the specimen:

Press "manual", "pause" and lift up the tissue basket, then take out the specimen. The system is running completely.

V、【Error alarm】

The system can detect the possible error and alarm the error and operate intelligent. The tissue basket will not go into paraffin jar while the paraffin is not melted completely, in this situation, the tissue basket will stay in the previous jar and alarm, LCD showing below:

```
┌─────────────────────────────────────┐
│  ↑   ■            2011-01-29 14:00:00 │
│                                       │
│                                       │
│   Obstacle error! please return       │
│                                       │
└─────────────────────────────────────┘
```

After the obstacle and error is eliminated, then press "return", the system will complete the unfinished running.

VI、【Maintenance】

1. Install the equipment where there is no water splash.

2. Install the equipment on the stable working stand.

3. Store the equipment in dry environment where there is no flame or no dust.

4. Don't install the equipment in the environment where there is chemical reagent or poisonous gas flowing.

5. Put the equipment away from the big machine of consuming the high voltage and strong current (e.g. big refrigerator, drying cabinet, ultrasonic or electromagnetic wave generating machine).

6. Plug the power cord in the special socket with grounding line that ensure the good grounding condition.

7. Cut off the power supply before any repairing. Open the top cover and 3 Brush-Armature structure is visible. Don't touch them because they have the VAC220 high voltage.

8. Lubricate the equipment once a year to guarantee the good lubrication condition.

9. Cut off the power supply of equipment when connecting or disconnecting the cable of paraffin jars.

VII、【Appendix】

1、user manual   1

2、glass jar   9

3、paraffin jar   3

4、power cord   1

5、plastic encloser   1

6、tissue basket   4

7、cable for paraffin jar   3

8、fuse box Φ5×20 5A   4

9、screw driver -2 inch   1

10、screw driver -3 inch   1

Appendix 1: Typical programme

	Reagent	Processing time	
		Program 01 for 2 basket	Program 02 for 1 bask
Jar 1	AF reagent （alcohol & formalin mixing）	1 hour	1 hour
Jar 2	AF reagent （alcohol & formalin mixing）	1 hour	1 hour
Jar 3	95% alcohol	1 hour	1 hour
Jar 4	95% alcohol	1 hour	1 hour 30 min
Jar 5	95% alcohol	2 hour	1 hour 30 min
Jar 6	absolute alcohol	1 hour	1 hour 30 min
Jar 7	absolute alcohol	1 hour	20 min
Jar 8	xylene	30 min	20 min
Jar 9	xylene	30 min	20 min
Jar 10	paraffin	30 min	1 hour 30 min
Jar 11	paraffin	1 hour 30 min	1 hour 30 min
Jar 12	paraffin	2 hour	1 hour
Total time:		13 hour	12.5 hour
Process specimen:		Quantity: 80-160 pc	Quantity: 1-80 pc

(Attention: these data just for user reference only.)

Appendix 2: Technical specification

1、Processing jar:　12

2、Reagent jar

       Quantity:　9

       Capacity:　2.2L

3、Paraffin jar

       Quantity:　3

       Quantity:　1.8L

       Temperature setting:　45 - 85 ℃

4、Programme

       Jar processing time:　0　-　99 hour 59 min

       Delay time: 0 – 99 day 99 hour 59 min.

5、Net weight:　80 kg.

6、Overall dimension:　780（diameter）× 780～590（height）mm

7、Power supply:　VAC 220V, 50Hz

8、Power:　800 W

9、Working ambient:

   Temperature: 5～40℃

   Humidity:＜85%（20℃ ±5℃）.
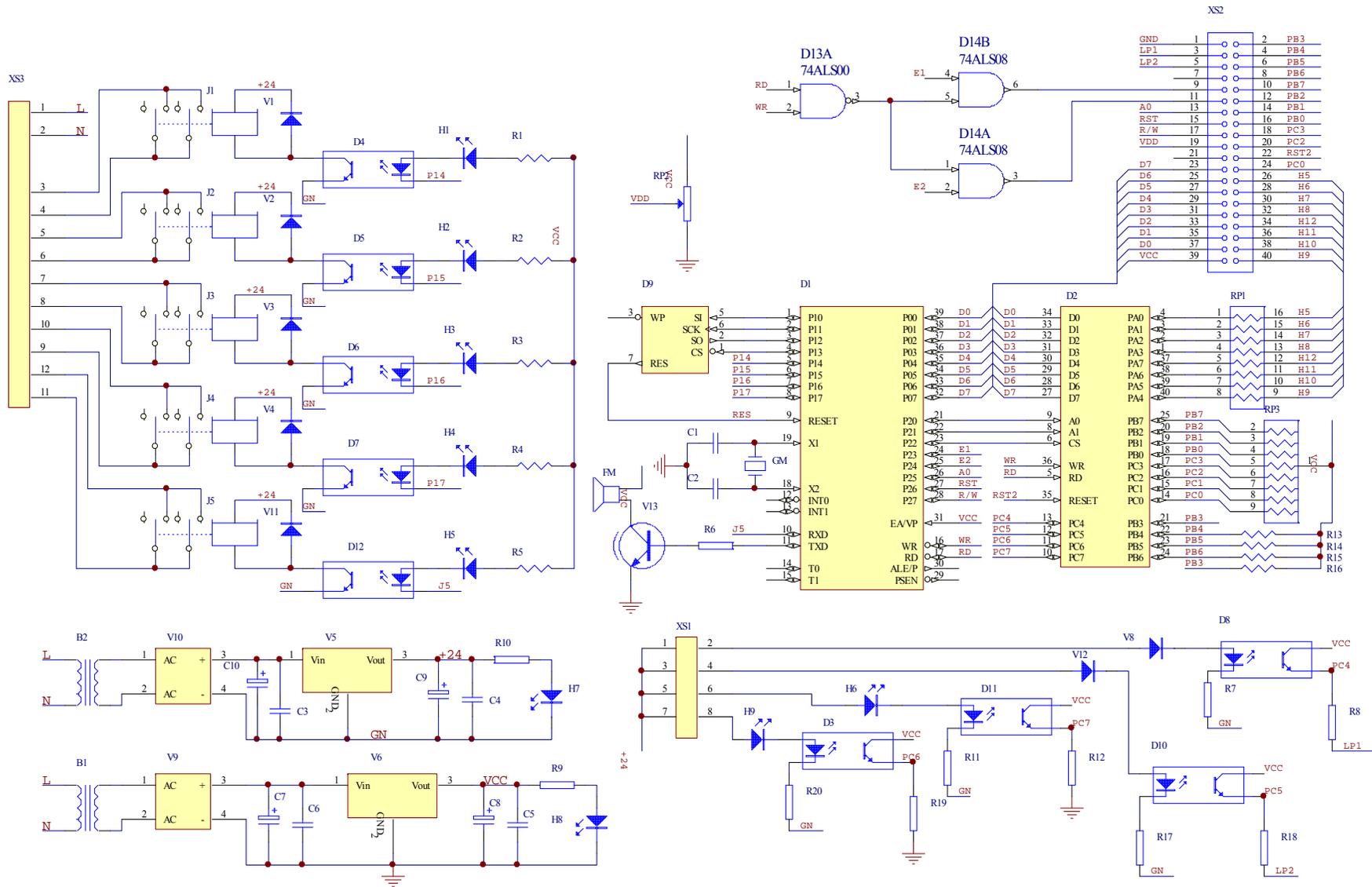
TSJ-1A+ electric circuit drawing