

印刷机印刷色组高低速相位差改进措施

Edit Subject (File Menu, Properties)

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I Versions

Version	Date	Comment	Edited by
1.0	12,01, 2023	First Edition	柴泽峰

Table 1: Versions

II Distribution

Name	Company, Department	Amount	Remarks

Table 2: Distribution

III Safety Notices

Safety notices in this document are organized as follows:

Safety notice	Description
Danger!	Disregarding the safety regulations and guidelines can be life-threatening.
Warning!	Disregarding the safety regulations and guidelines can result in severe injury or heavy damage to material.
Caution!	Disregarding the safety regulations and guidelines can result in injury or damage to material.
Information:	Important information used to prevent errors.

Table 3: Safety notices

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1 Introduction

标准印刷机主控 19 寸大屏硬件和软件配置如下：

硬件: 5AP923.1906-00、5PPC2100_BY44_000(5ACCIF01.FPSC-001)

软件: AS: V4.2.8.54

AR: D4.26

ACP10: 5.15.1

VC: V4.26.4

印刷色组相位差主要用于配方的相位保存和相位恢复功能

1.1 目前 BST、X67 机型高低速色组相位差描述

BST、X67 机型非直连色组高低速相位差理论上是一致的。由于网络延时及接近开关安装等差异性，导致色组高低速相位差出现较大跳动，详见视频



色组相位差的情况描述：

- 1、相同配方名下，不同速度段色组相位差存在差异性，导致相位保存的配方在再次配方提取时相位恢复不是很准确。
- 2、裁切过程中，由于材料张力发生的微小变化会引起整机色组相位差出现变大或者变小趋势。也会导致相位恢复不是很准确。

1.2 标准程序实现过程

```
void _CYCLIC AngleCtrlCYCLIC(void)
{
    /* TODO: Add code here */
    /******input******/
    circle_print = gRcpUser.general.sImage;
    for(i=0;i<gRcpFix.nbPRU;i++)
    {
        if(gActData.printUnit.mode[i] != MODE_SYNC) offsetPos[i] = 0;
        else offsetPos[i] = gActData.printUnit.triggerOffset[i] /*+2100000000~-2100000000*/
    }
    /*handle pul offset*/
    if(gActData.printUnit.mode[0] != MODE_SYNC || gRcpUser.printUnit.ctrlMode[0] != PRINT_MODE_PRINT)
    {
        for(i=0;i<gRcpFix.nbPRU;i++)
        {
            if(gActData.printUnit.mode[i] == MODE_SYNC && gRcpUser.printUnit.ctrlMode[i] == PRINT_MODE_PRINT)
            {
                offsetRef = offsetPos[i]; /*+2100000000~-2100000000*/
                offsetRefDataOK = gAngleCtrl.monitor.dataOK[i];
                break;
            }
        }
    }
    else
    {
        offsetRef = offsetPos[0]; /*reference pu is print unit 1*/
        offsetRefDataOK = gAngleCtrl.monitor.dataOK[0];
    }
}
```

循环通讯读取

```

/*****function*****/
for(i=0;i<gRcpFix.nbPRU;i++)
{
    if(circle_print==0)/* do not excute circle_print=0 or diff circle*/
    {
        gAngleCtrl.monitor.dataOK[i] = 0;
        continue;
    }
    if((offsetPos[i]!=offsetPosOld[i] && gActData.printUnit.mode[i] == MODE_SYNC)
    {
        powerlink_delay = 0;
    }
    offsetPosOld[i] = offsetPos[i];

    if(gAngleCtrl.monitor.dataOK[i] == 0)      /* first time init must trigger not zero*/
    {
        if(abs(gActData.printUnit.sAct[i]) > (circle_print*2))
        {
            if(abs(offsetPos[i]) < (circle_print+1000))
            {
                gAngleCtrl.monitor.dataOK[i] = 1;
            }
        }
    }
    else
    {
        /*no trigger signal reset init*/
        if(abs(offsetPos[i]) > (circle_print+1000))
        {
            gAngleCtrl.monitor.dataOK[i] = 0; /*reset init bit*/
            /*after one time homing reset init*/
            /*in pru contral task*/
        }
    }
}
}/*for(i=0;i<NB_PRU;i++)*/
if (gRcpFix.printMotorRev != 1) //v20220518 Chais 直驱不需要Powerlink_delay++
{
    powerlink_delay++;
    if(powerlink_delay<=POWERLINK_RECEIVE_DIFF)return;
}
/*receiving value stay for some time all data value is valid*/

```

需要延时4个周期才能保证所有数据刷新上来

- 1、色组当前相位通过循环通讯读取。
- 2、POWERLINK_RECEIVE_DIFF 值为 4，需要 4 个循环周期才能保证所有轴数据刷新上来。

1.3 优化程序实现过程

```
else
{
    if (gAngleCtrl.monitor.dataOK[axisIndex] == 1 && dataOkOld[axisIndex] == 0 && gAngleCtrl.monitor.dataHomingOK[axisIndex] == 0)
    {
        //gActData.printUnit.sActTriggerPosEdge[axisIndex] = 0;
        sActSum[axisIndex] = gActData.printUnit.sAct[axisIndex] - gActData.printUnit.sActTriggerPosEdge[axisIndex];
        sActOld[axisIndex] = gActData.printUnit.sAct[axisIndex];
        gAngleCtrl.monitor.dataHomingOK[axisIndex] = 1;
    }
    if (gAngleCtrl.monitor.dataHomingOK[axisIndex] == 1) //TriggerPosEdge完毕进行计算
    {
        sActDelta[axisIndex] = gActData.printUnit.sAct[axisIndex] - sActOld[axisIndex];
        sActSum[axisIndex] += sActDelta[axisIndex];

        if(sActSum[axisIndex] > gRcpUser.general.sImage)
        {
            sActSum[axisIndex] -= gRcpUser.general.sImage;
        }
        if (sActSum[axisIndex] < 0)
        {
            sActSum[axisIndex] += gRcpUser.general.sImage;
        }

        gActData.printUnit.triggerOffset[axisIndex] = sActSum[axisIndex];
    }
    else
    {
        sActSum[axisIndex] = 0;
    }
}

/-----/
circle_print = gRcpUser.general.sImage;
//v20230817 modify
PlkDelayFlag = 1;
for(i=0;i<gRcpFix.nbPRU;i++)
{
    if (gAngleCtrl.monitor.dataHomingOK[i] == 0 && gActData.printUnit.mode[i] == MODE_SYNC)
    {
        PlkDelayFlag = 0;
    }
}

for(i=0;i<gRcpFix.nbPRU;i++)
{
    if(gActData.printUnit.mode[i] != MODE_SYNC) offsetPos[i] = 0;
    else offsetPos[i] = gActData.printUnit.triggerOffset[i];/**+2100000000~-2100000000*/
}
/*handle pul offset*/
if(gActData.printUnit.mode[0] != MODE_SYNC || gRcpUser.printUnit.ctrlMode[0] != PRINT_MODE_PRINT)
{
    for(i=0;i<gRcpFix.nbPRU;i++)
    {
        if(gActData.printUnit.mode[i] == MODE_SYNC && gRcpUser.printUnit.ctrlMode[i] == PRINT_MODE_PRINT)
        {
            offsetRef = offsetPos[i];
            offsetRefDataOK = gAngleCtrl.monitor.dataOK[i];
            break;
        }
    }
}
else
{
    offsetRef = offsetPos[0];
    offsetRefDataOK = gAngleCtrl.monitor.dataOK[0];
}
```

```

/*****
/*****function*****/
/*****
for(i=0;i<gRcpFix.nbPRU;i++)
{
    if(circle_print==0)/* do not excute circle_print=0 or diff circle*/
    {
        gAngleCtrl.monitor.dataOK[i] = 0;
        continue;
    }
    if((offsetPos[i]!=offsetPosOld[i]) && gActData.printUnit.mode[i] == MODE_SYNC)
    {
        powerlink_delay = 0;
    }
    offsetPosOld[i] = offsetPos[i];

    if(gAngleCtrl.monitor.dataOK[i] == 0)          /* first time init must trigger not zero*/
    {
        if(abs(gActData.printUnit.sAct[i]) > (circle_print*2))
        {
            if(abs(offsetPos[i]) < (circle_print+1000))
            {
                gAngleCtrl.monitor.dataOK[i] = 1;
            }
        }
    }
    else
    {
        /*no trigger signal reset init*/
        if(abs(offsetPos[i]) > (circle_print+1000))
        {
            gAngleCtrl.monitor.dataOK[i] = 0; /*reset init bit*/
        }
        /*after one time homing reset init*/
        /*in pru contral task*/
    }
}
}/*for(i=0;i<NB_PRU;i++)*/
if (gRcpFix.printMotorRev != 1) //v20220518 Chaiz 直驱不需要Powerlink_delay++
{
    powerlink_delay++;
    if(powerlink_delay<=POWERLINK_RECEIVE_DIFF && PlkDelayFlag == 0) return;
}
/*receive value stay for some time. all data value is valid*/

```

实现方法：

- 1、gActData.printUnit.sActTriggerPosEdge 通过循环通讯得到数据给 X67 模块配置
- 2、X67 位置通过伺服给定，后期利用 X67 位置计算色组相位
- 3、伺服位置每个周期都可以读到，故所有色组 X67 模块配置完后计算色组相位不需要 PowerlinkDelay
- 4、修改后高低速色组相位差视频如下：



色组相位差(优化).
mp4

1.4 测试总结

- 1、程序优化后印刷色组高低速相位差跳动非常小。
- 2、相位保存、相位提取可以得到很好的应用。

2 Figure Index

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3 Table Index

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4 Listing Index

Es konnten keine Einträge für ein Abbildungsverzeichnis gefunden werden.

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