



WB32F10x

Getting Started Development

Westberry Technology (ChangZhou) Corp., Ltd

Contents

CONTENTS	II
1 WB32F10X FIRMWARE LIBRARY INTRODUCTION	3
2 USE THE KEIL MDK TO CREATE THE PROJECT	4
3 DETAILS OF WB32F10X STANDARD PERIPHERALS LIBRARY	16
REVISION HISTORY	18
IMPORTANT NOTICE	19

1 WB32F10x Firmware Library Introduction

The WB32F10x Standard Peripherals Library is structured as follows:

- ✓  WB32F10x_StdPeriph_Lib
 - >  Documentation
 - ✓  Libraries
 - >  CMSIS
 - >  WB32F10x_StdPeriph_Driver
 - >  WB32F10x_USBDevice_Driver
 - ✓  Project
 - >  WB32F10x_StdPeriph_Examples
 -  WB32F10x_StdPeriph_Template
 - >  Utilities

This library contains a collection of routines, data structures and macros covering the features of WB32F10x peripherals.

Documentation for the WB32F10X firmware library is stored in the Documentation folder.

- **Libraries** contains three subfolders, **CMSIS**, **WB32F10x_StdPeripher_Driver** and **WB32F10x_USBDevice_Driver**.
- The **CMSIS** stores the startup files, headers, etc. associated with the **WB32F10x** chip.
- The **WB32F10X_STDPeripher_Driver** contains the source code of the **WB32F10x** firmware library, which is related to the standard peripheral.
- The **WB32F10x_USBDevice_Driver** contains the WB32F10X USB device protocol stack code.

The Project folder contains two subfolders, **WB32F10X_StdPeripher_Examples** and **WB32F10X_StdPeripher_Template**.

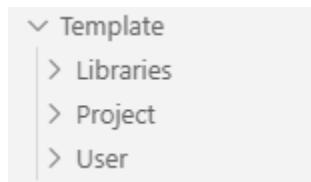
- The **WB32F10X_StdPeripher_Example** folder contains the official source code of the firmware provided by **WestberryTech** for reference.
- The **WB32F10X_StdPeripher_Template** folder contains the file templates needed to create the new project.

The **Utilities** folder holds common source code.

2 Use the keil mdk to create the project

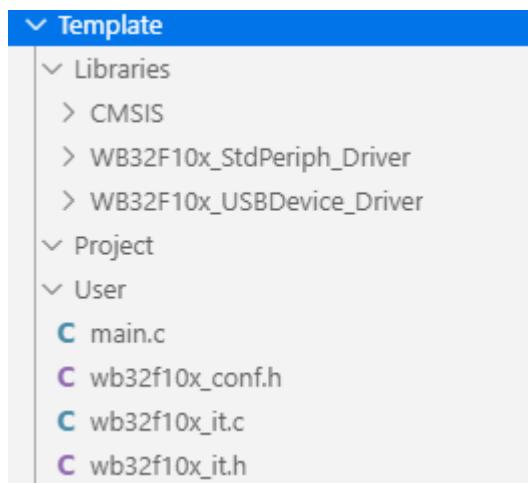
Step 01, Create a new folder named **Template** to hold the entire project.

Step 02, Create **Libraries**, **Project** and **User** subfolders in the **Template** folder(You can also make the project directory structure according to your own habits.).

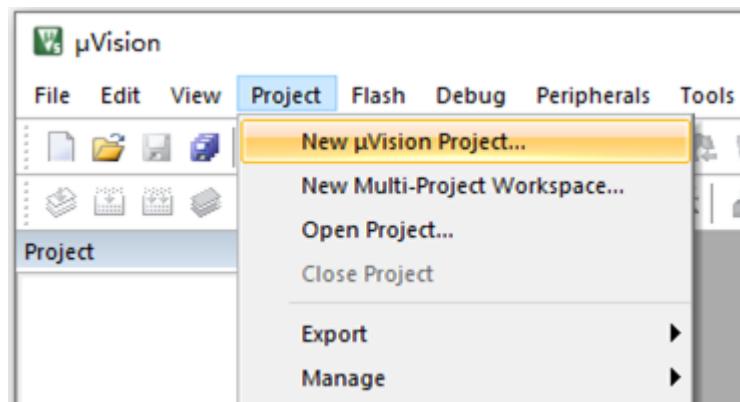


Step 03, Copy the contents of the **Libraries** folder in the **WB32F10x_StdPeriph_Lib** folder to the **Template\Libraries** folder.

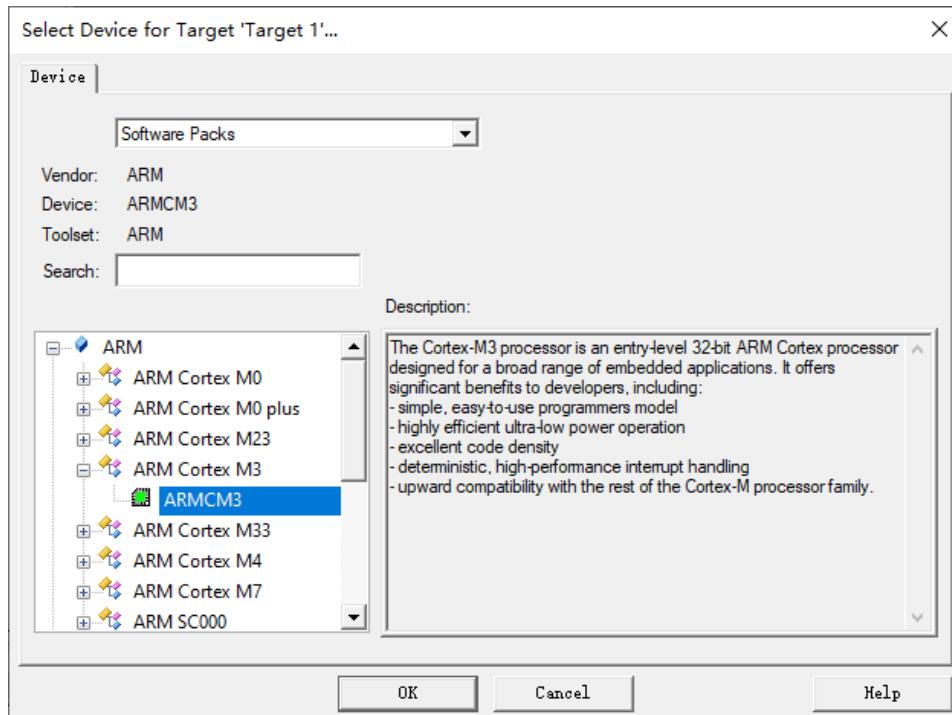
Step 04, Copy the contents of the **Project\ WB32F10X_STDPipher_Template** folder from the **WB32F10x_StdPeriph_Lib** folder to the **Template\User** folder.



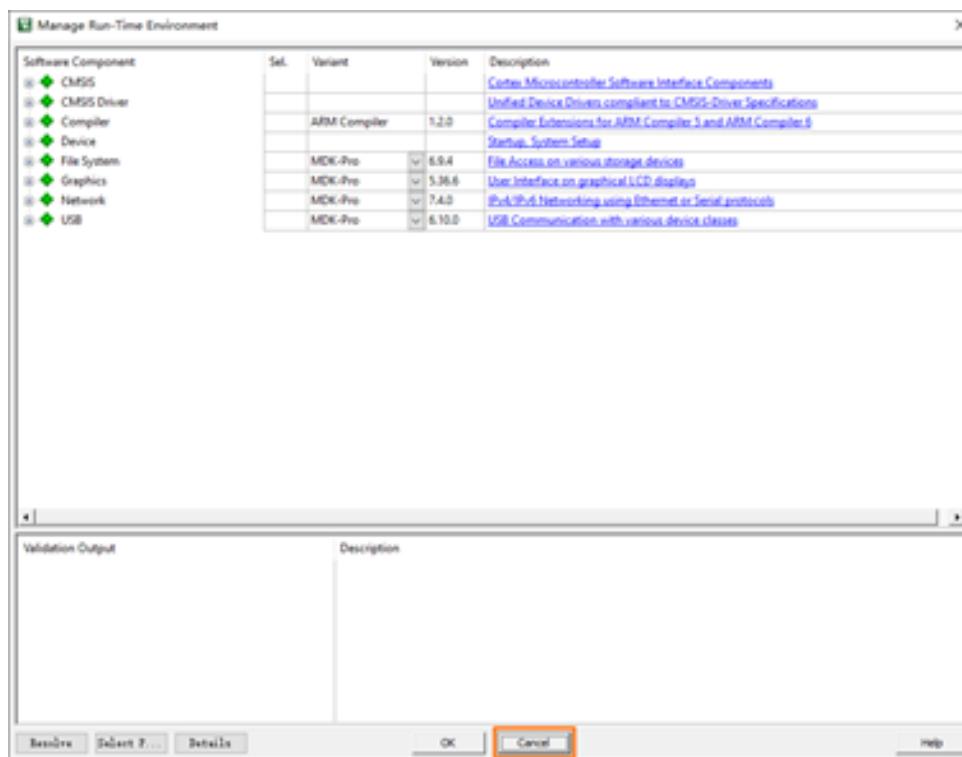
Step 05, Open the **Keil MDK** software, Click **Project-> New uVision Project...** as shown:



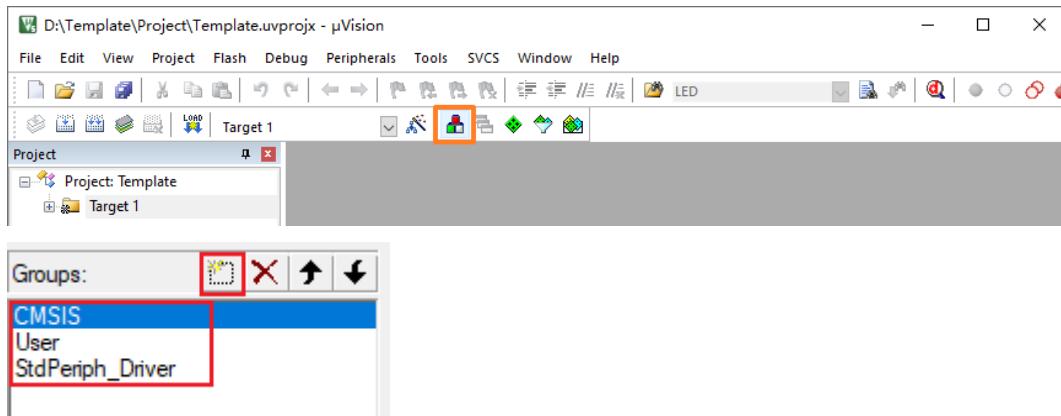
Step 06, Select the device to use for the project as **ARMCM3**, and then click **OK**.



Step 07, You will see the **Manage Run-Time Environment** dialog pop up and you can click **Cancel** to close the dialog box.



Step 08, You can set up three Groups: **CMSIS**, **User**, **StdDriver** before import the Standard Peripherals Library file.



Add files to the Group

Add to the CMSIS Group:

Template\Libraries\CMSIS\Device\WB\WB32F10x\startup\arm\startup_wb32f10x.s

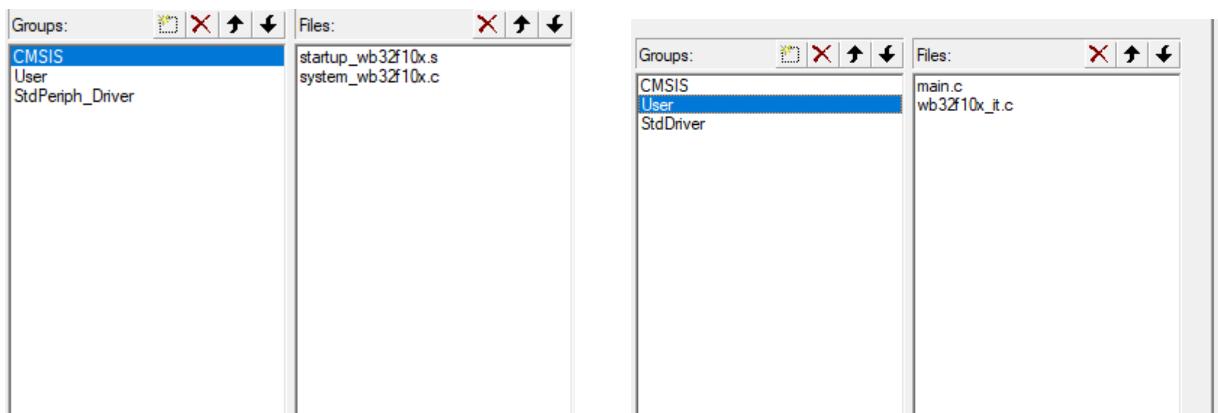
Template\Libraries\CMSIS\Device\WB\WB32F10x\system_wb32f10x.c

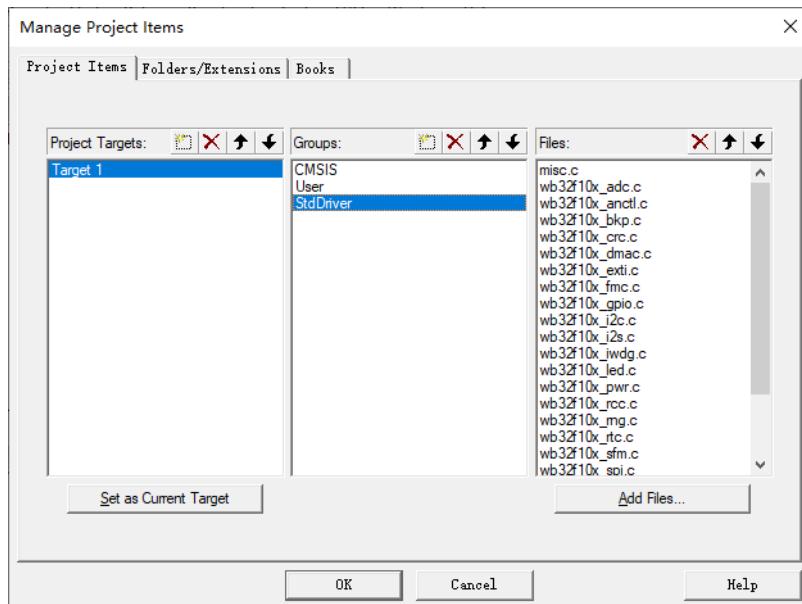
Add to the User Group:

Template\User\main.c

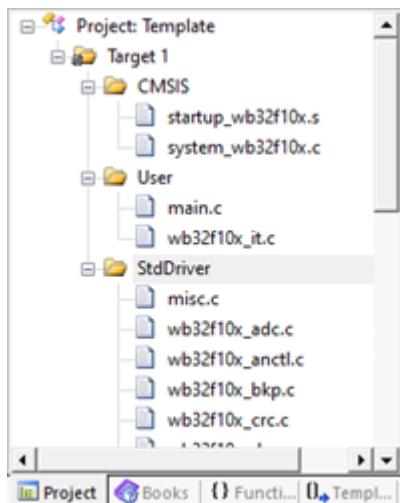
Template\User\wb32f10x_it.c

Add all the .c(source code)files in the Template\Libraries\WB32F10x_StdPeriph_Driver\ SRC folder to the **STDDriver** Group

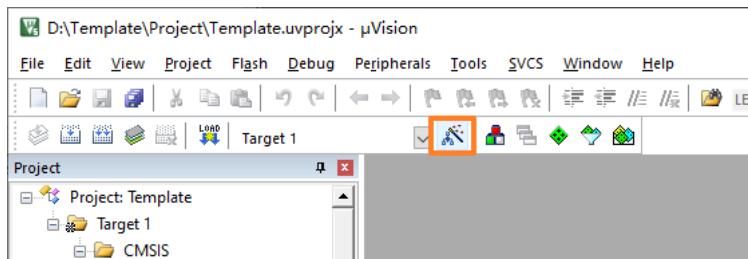




Finally, the whole project is structured as follows:



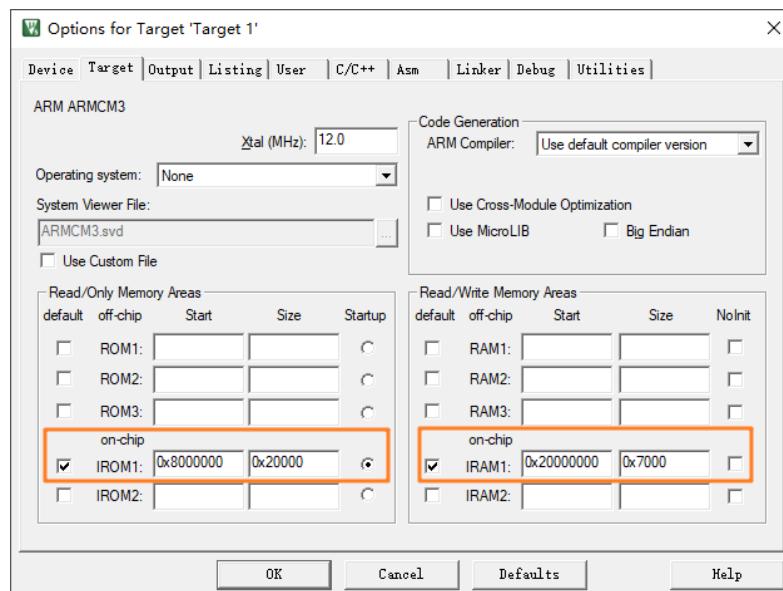
Step 09, Click the icon below to open the Options for Target dialog Box.



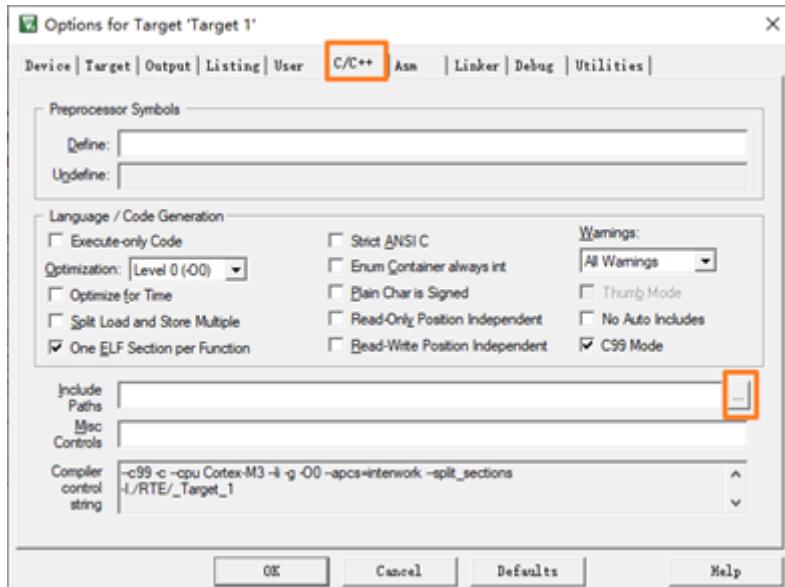
Configure Read/Only Memory Areas and Read/Write Memory Areas (Configure the starting address and size of Flash and SRAM.).

Note : Configure the **Flash** and **SRAM** sizes based on your IC type. 128KB Flash and 28KB SRAM are used as an example (see the following table for capacity configurations of other **Product Code**).

Product Code	Flash Size	SRAM Size
WB32F10xx6	0x8000 (32KB)	0x3000 (12KB)
WB32F10xx8	0x10000 (64KB)	0x5000 (20KB)
WB32F10xx9	0x18000 (96KB)	0x7000 (28KB)
WB32F10xxB	0x20000 (128KB)	0x7000 (28KB)
WB32F10xxC	0x40000 (256KB)	0x9000 (36KB)



Step 10, Configure the header file include path for the project in the C/C++ TAB.



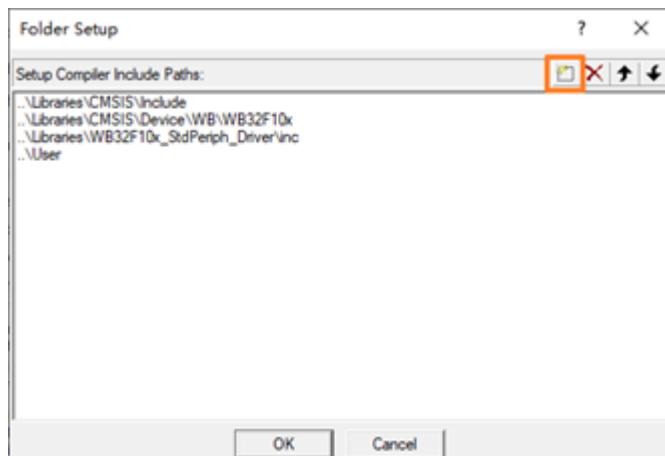
Add the paths as follows:

..\Libraries\CMSIS\Include

..\Libraries\CMSIS\Device\WB\WB32F10x

..\Libraries\WB32F10x_StdPeriph_Driver\inc

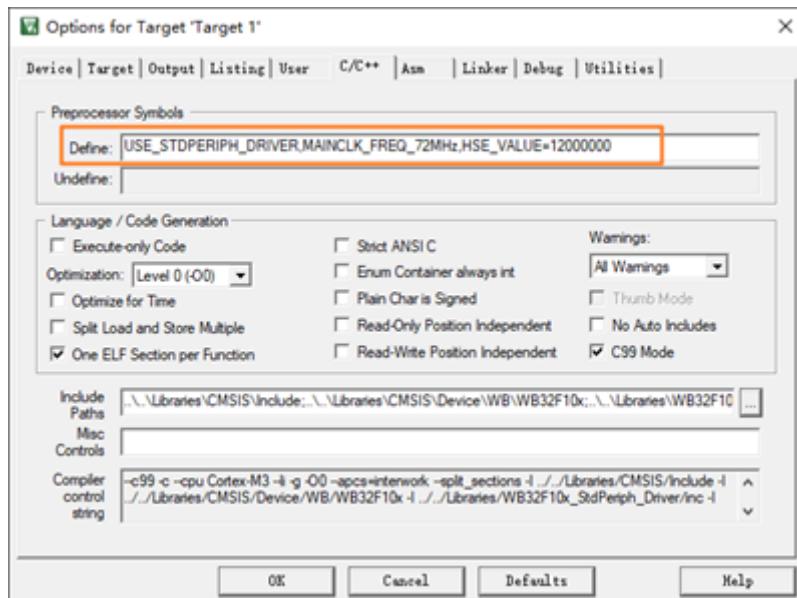
..\User



Step 11, Include **USE_STDALTER_DRIVER** and **MAINCLK_FREQ_72MHZ** definitions in the Preprocessor Symbols (see below for details on these two definitions).

USE_STDPERIPH_DRIVER definition indicates using Standard Peripherals Library
MAINCLK_FREQ_72MHz definition indicates using the 72MHz Main Clock configuration function predefined in system_wb32f10x.c to configure the Main Clock.
HSE_VALUE=12000000 definition indicates the external crystal frequency used is 12MHz.

Note: The main frequency cannot exceed the maximum frequency supported by your IC type.

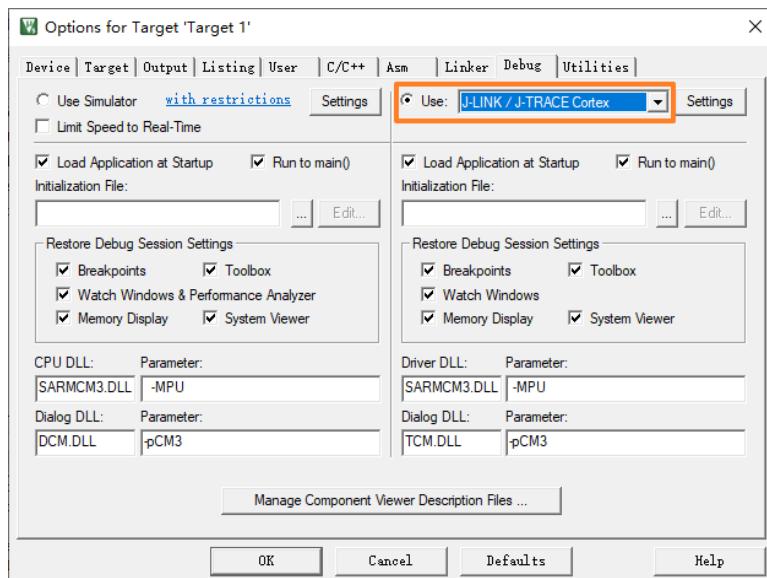


Step 12, Click **OK**. At this point, the project setup configuration is complete. Next we will configure debugging.

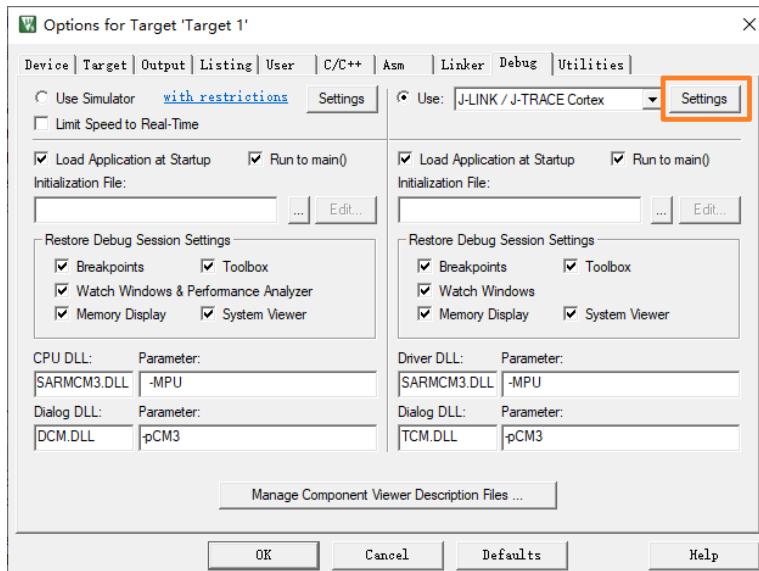
Step 13, Because the WB32F10x is an ARM Cortex-M3 chip, you can use a Cortex-M3-enabled debugger (e.g., JLink, Ulink, CMSIS-DAP, etc.) to debug your applications. Let's use JLink as an example to demonstrate the configuration debugging of WB32F10x

Step 14, Connect A JLink tool to your computer, use the JLink SWD interface to connect to the WB32F10X chip, and power the chip.

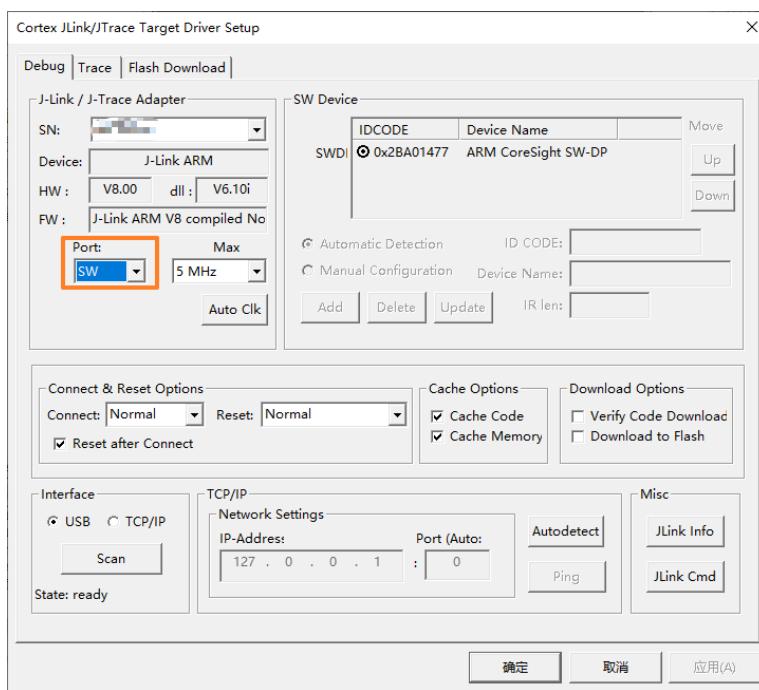
Step 15, Open the Options for Target dialog box, switch to the **Debug** TAB, and choose to **J-Link/J-TRACE Cortex**.



Step 16, Click Settings to configure the debugger.

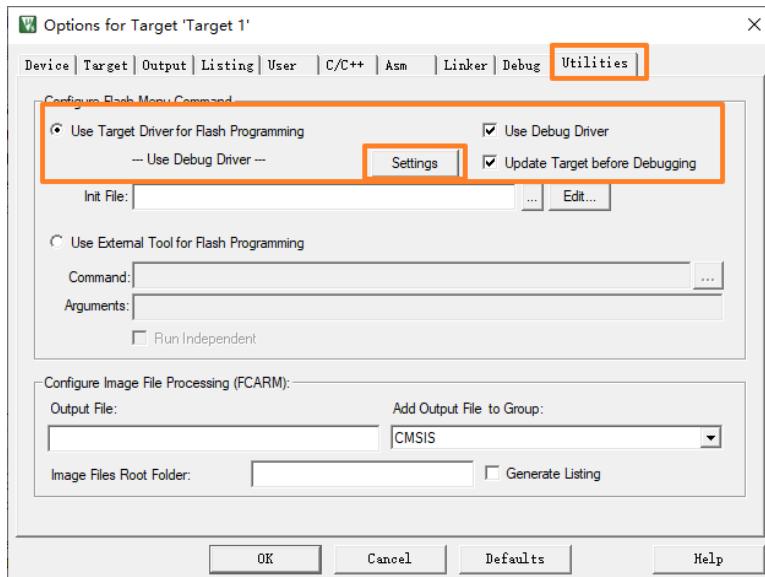


You can see on the right that JLink has detected the WB32F10X chip after select the SW interface.

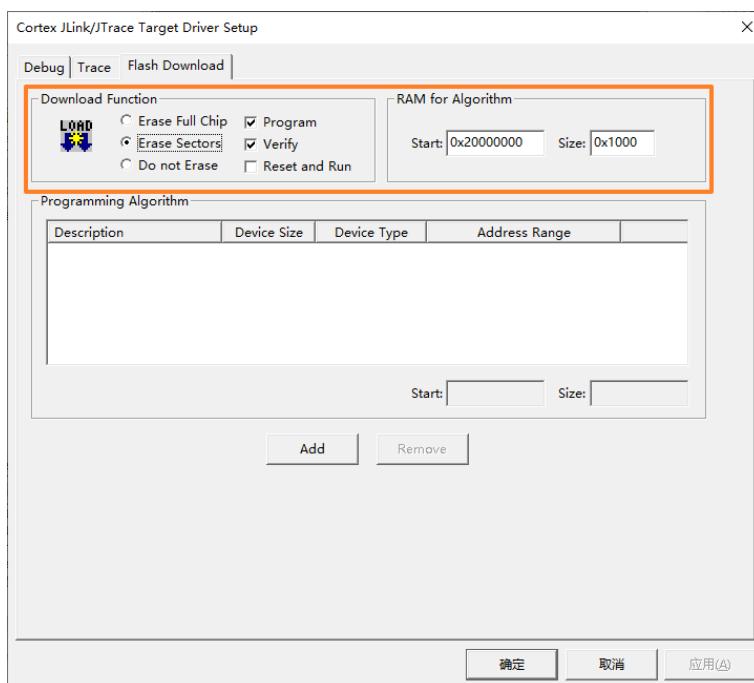


Step 17, Then click 确定(OK) to exit.In the Utilities TAB,

Step 18, You need to do the setup shown in the following figure:

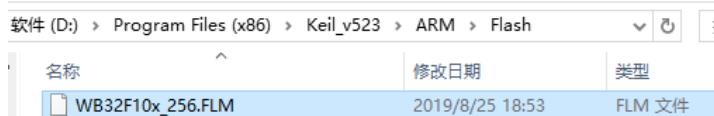


Then click the **Settings** button to open the Flash Programming configuration dialog box. Do the configuration as shown.

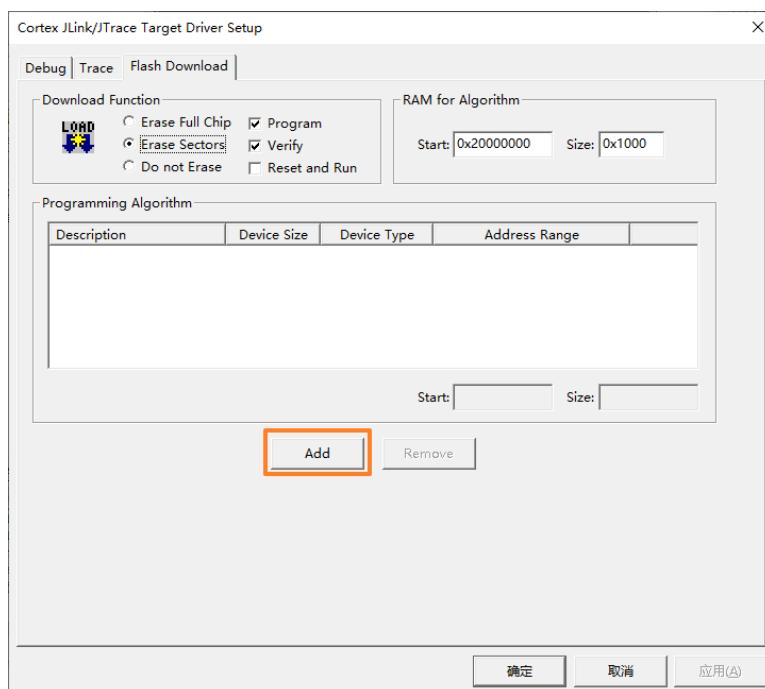


Step 19, Programming Algorithm configuration

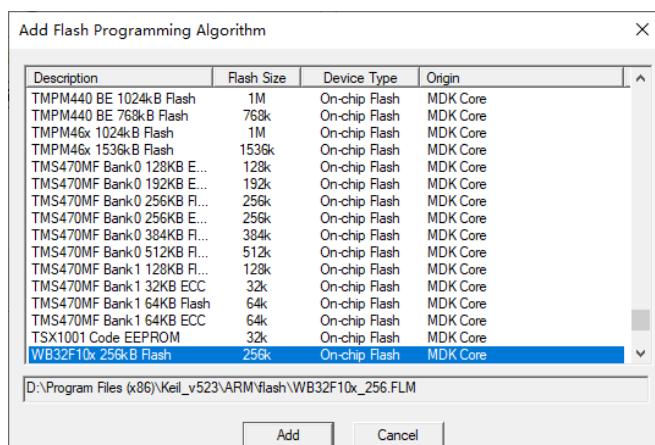
Step 20, Copy the **WB32F10X_256.FLM** file provided by **WestberryTech** to the corresponding folder in the installation directory of Keil MDK
 (on my computer the path is D:\Program Files (x86)\Keil_v523\ARM\Flash)



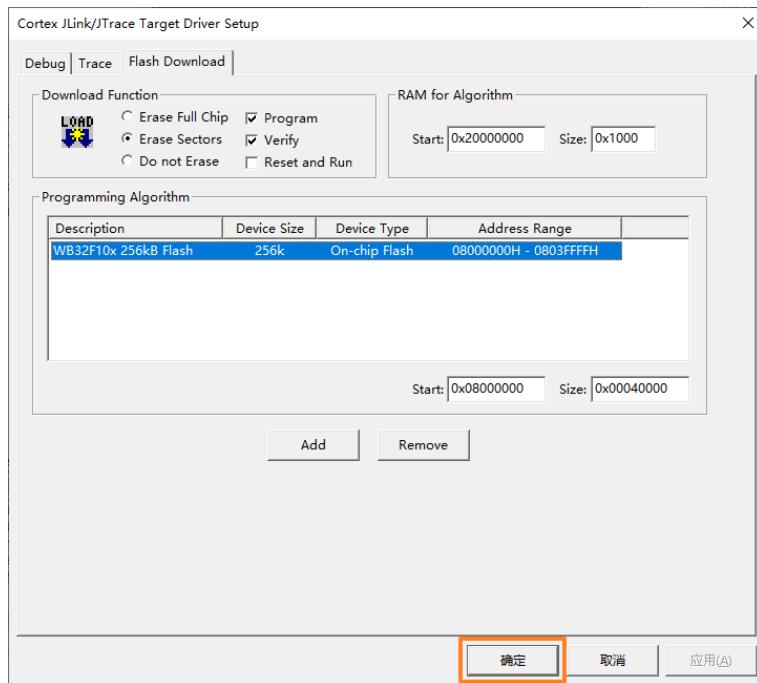
Then click the **Add** button in the **Programming Algorithm** dialog box



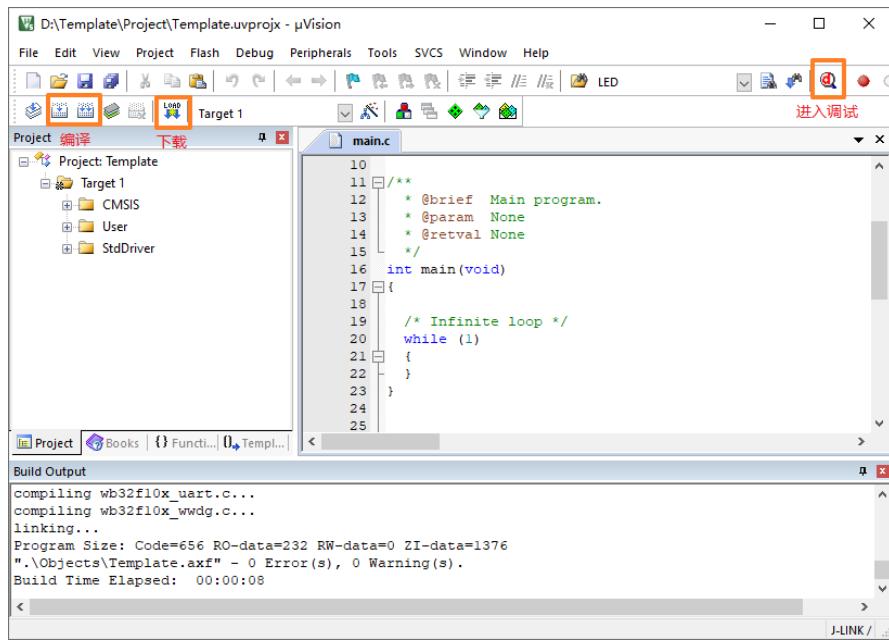
Step 21, Locate the Programming Algorithm named **WB32F10X 256KB Flash** and click **Add**.



Then click 确定(OK).

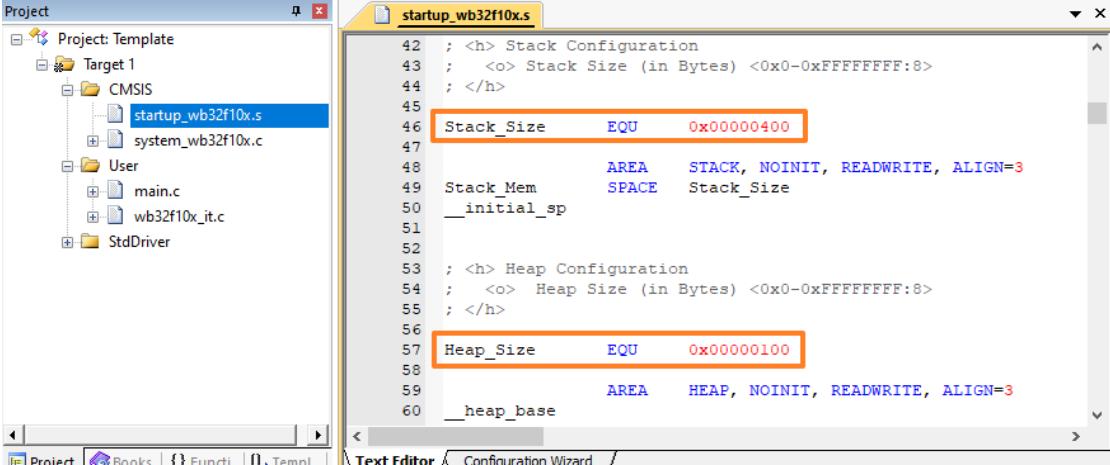


At this point, you are ready to **compile**, **download**, and **debug** the program. The configuration of the firmware library is described in the following section.



3 Details of WB32F10x Standard Peripherals Library

The size of the application stack and heap can be configured in `startup_wb32f10x.s` as follows:

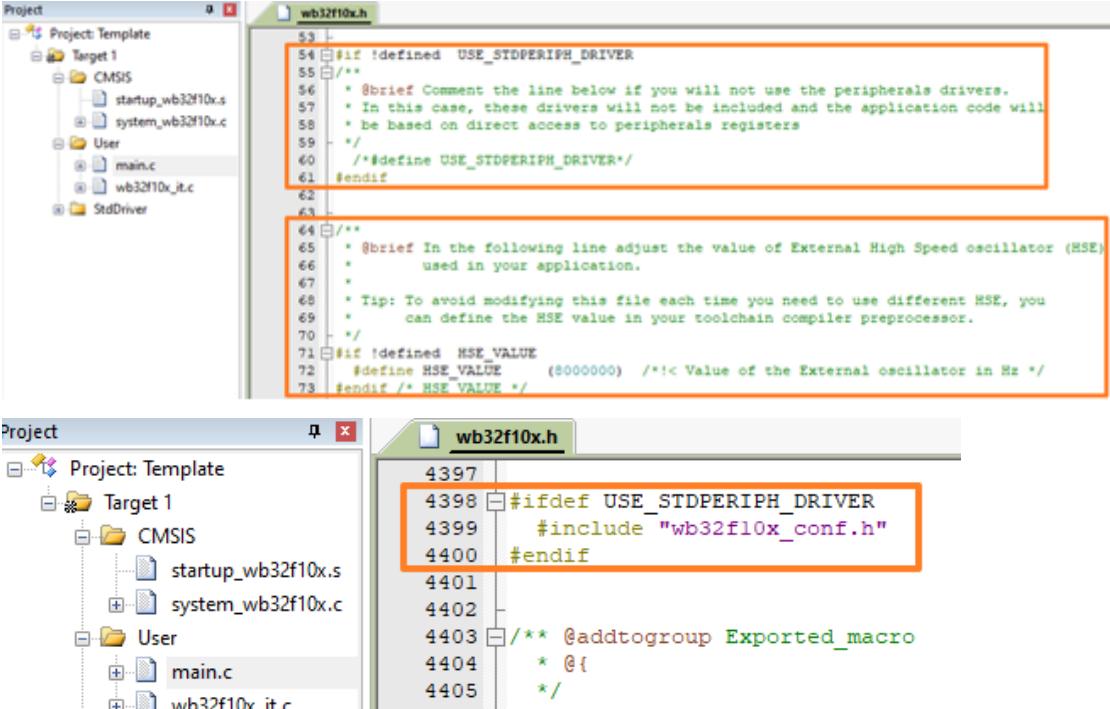


```

42 ; <h> Stack Configuration
43 ;   <o> Stack Size (in Bytes) <0x0-0xFFFFFFFF:8>
44 ; </h>
45
46 Stack_Size    EQU    0x00000400
47
48           AREA    STACK, NOINIT, READWRITE, ALIGN=3
49 Stack_Mem     SPACE   Stack_Size
50 __initial_sp
51
52
53 ; <h> Heap Configuration
54 ;   <o>  Heap Size (in Bytes) <0x0-0xFFFFFFFF:8>
55 ; </h>
56
57 Heap_Size     EQU    0x00000100
58
59           AREA    HEAP, NOINIT, READWRITE, ALIGN=3
60 __heap_base

```

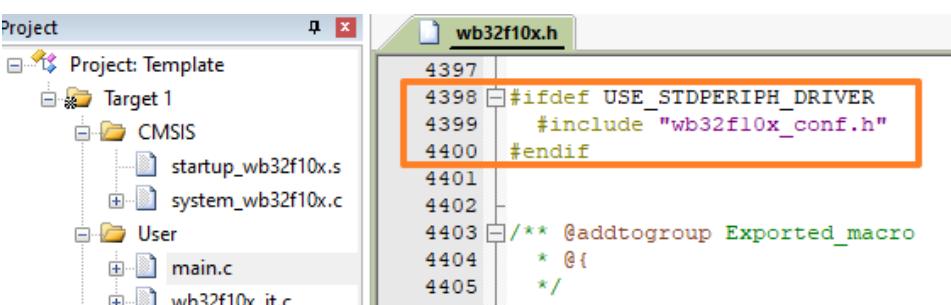
You may want to note that there are two macro definitions in `wb32f10x.h`.



```

53 /**
54  * @brief Comment the line below if you will not use the peripherals drivers.
55  * In this case, these drivers will not be included and the application code will
56  * be based on direct access to peripherals registers
57 */
58 /*#define USE_STDPERIPH_DRIVER*/
59 */
60
61 /**
62  * @brief In the following line adjust the value of External High Speed oscillator (HSE)
63  * used in your application.
64  *
65  * Tip: To avoid modifying this file each time you need to use different HSE, you
66  * can define the HSE value in your toolchain compiler preprocessor.
67  */
68
69 /**
70  * @if !defined HSE_VALUE
71  * #define HSE_VALUE (8000000) /*!< Value of the External oscillator in Hz */
72  * #endif /* HSE_VALUE */
73 */

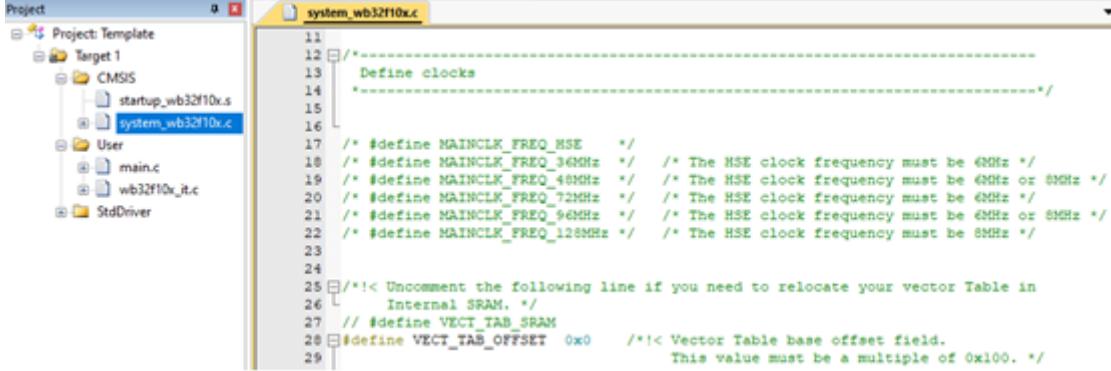
```

```

4397
4398 #ifdef USE_STDPERIPH_DRIVER
4399     #include "wb32f10x_conf.h"
4400 #endif
4401
4402
4403 /** @addtogroup Exported_macro
4404  * @{
4405  */
4406
4407
4408
4409
4410
4411
4412
4413
4414
4415
4416
4417
4418
4419
4420
4421
4422
4423
4424
4425
4426
4427
4428
4429
4430
4431
4432
4433
4434
4435
4436
4437
4438
4439
4440
4441
4442
4443
4444
4445
4446
4447
4448
4449
4450
4451
4452
4453
4454
4455
4456
4457
4458
4459
4460
4461
4462
4463
4464
4465
4466
4467
4468
4469
4470
4471
4472
4473
4474
4475
4476
4477
4478
4479
4480
4481
4482
4483
4484
4485
4486
4487
4488
4489
4490
4491
4492
4493
4494
4495
4496
4497
4498
4499
4500
4501
4502
4503
4504
4505
4506
4507
4508
4509
4510
4511
4512
4513
4514
4515
4516
4517
4518
4519
4520
4521
4522
4523
4524
4525
4526
4527
4528
4529
4530
4531
4532
4533
4534
4535
4536
4537
4538
4539
4540
4541
4542
4543
4544
4545
4546
4547
4548
4549
4550
4551
4552
4553
4554
4555
4556
4557
4558
4559
4560
4561
4562
4563
4564
4565
4566
4567
4568
4569
4570
4571
4572
4573
4574
4575
4576
4577
4578
4579
4580
4581
4582
4583
4584
4585
4586
4587
4588
4589
4590
4591
4592
4593
4594
4595
4596
4597
4598
4599
4599
4600
4601
4602
4603
4604
4605
4606
4607
4608
4609
4610
4611
4612
4613
4614
4615
4616
4617
4618
4619
4620
4621
4622
4623
4624
4625
4626
4627
4628
4629
4630
4631
4632
4633
4634
4635
4636
4637
4638
4639
4640
4641
4642
4643
4644
4645
4646
4647
4648
4649
4650
4651
4652
4653
4654
4655
4656
4657
4658
4659
4660
4661
4662
4663
4664
4665
4666
4667
4668
4669
4670
4671
4672
4673
4674
4675
4676
4677
4678
4679
4680
4681
4682
4683
4684
4685
4686
4687
4688
4689
4690
4691
4692
4693
4694
4695
4696
4697
4698
4699
4699
4700
4701
4702
4703
4704
4705
4706
4707
4708
4709
4710
4711
4712
4713
4714
4715
4716
4717
4718
4719
4719
4720
4721
4722
4723
4724
4725
4726
4727
4728
4729
4729
4730
4731
4732
4733
4734
4735
4736
4737
4738
4739
4739
4740
4741
4742
4743
4744
4745
4746
4747
4748
4749
4749
4750
4751
4752
4753
4754
4755
4756
4757
4758
4759
4759
4760
4761
4762
4763
4764
4765
4766
4767
4768
4769
4769
4770
4771
4772
4773
4774
4775
4776
4777
4778
4779
4779
4780
4781
4782
4783
4784
4785
4786
4787
4788
4789
4789
4790
4791
4792
4793
4794
4795
4796
4797
4798
4799
4799
4800
4801
4802
4803
4804
4805
4806
4807
4808
4809
4809
4810
4811
4812
4813
4814
4815
4816
4817
4818
4819
4819
4820
4821
4822
4823
4824
4825
4826
4827
4828
4829
4829
4830
4831
4832
4833
4834
4835
4836
4837
4838
4839
4839
4840
4841
4842
4843
4844
4845
4846
4847
4848
4849
4849
4850
4851
4852
4853
4854
4855
4856
4857
4858
4859
4859
4860
4861
4862
4863
4864
4865
4866
4867
4868
4869
4869
4870
4871
4872
4873
4874
4875
4876
4877
4878
4879
4879
4880
4881
4882
4883
4884
4885
4886
4887
4888
4889
4889
4890
4891
4892
4893
4894
4895
4896
4897
4898
4899
4899
4900
4901
4902
4903
4904
4905
4906
4907
4908
4909
4909
4910
4911
4912
4913
4914
4915
4916
4917
4918
4919
4919
4920
4921
4922
4923
4924
4925
4926
4927
4928
4929
4929
4930
4931
4932
4933
4934
4935
4936
4937
4938
4939
4939
4940
4941
4942
4943
4944
4945
4946
4947
4948
4949
4949
4950
4951
4952
4953
4954
4955
4956
4957
4958
4959
4959
4960
4961
4962
4963
4964
4965
4966
4967
4968
4969
4969
4970
4971
4972
4973
4974
4975
4976
4977
4978
4979
4979
4980
4981
4982
4983
4984
4985
4986
4987
4988
4989
4989
4990
4991
4992
4993
4994
4995
4996
4997
4998
4999
4999
5000
5001
5002
5003
5004
5005
5006
5007
5008
5009
5009
5010
5011
5012
5013
5014
5015
5016
5017
5018
5019
5019
5020
5021
5022
5023
5024
5025
5026
5027
5028
5029
5029
5030
5031
5032
5033
5034
5035
5036
5037
5038
5039
5039
5040
5041
5042
5043
5044
5045
5046
5047
5048
5049
5049
5050
5051
5052
5053
5054
5055
5056
5057
5058
5059
5059
5060
5061
5062
5063
5064
5065
5066
5067
5068
5069
5069
5070
5071
5072
5073
5074
5075
5076
5077
5078
5079
5079
5080
5081
5082
5083
5084
5085
5086
5087
5088
5089
5089
5090
5091
5092
5093
5094
5095
5096
5097
5098
5099
5099
5100
5101
5102
5103
5104
5105
5106
5107
5108
5109
5109
5110
5111
5112
5113
5114
5115
5116
5117
5118
5119
5119
5120
5121
5122
5123
5124
5125
5126
5127
5128
5129
5129
5130
5131
5132
5133
5134
5135
5136
5137
5138
5139
5139
5140
5141
5142
5143
5144
5145
5146
5147
5148
5149
5149
5150
5151
5152
5153
5154
5155
5156
5157
5158
5159
5159
5160
5161
5162
5163
5164
5165
5166
5167
5168
5169
5169
5170
5171
5172
5173
5174
5175
5176
5177
5178
5179
5179
5180
5181
5182
5183
5184
5185
5186
5187
5188
5189
5189
5190
5191
5192
5193
5194
5195
5196
5197
5198
5199
5199
5200
5201
5202
5203
5204
5205
5206
5207
5208
5209
5209
5210
5211
5212
5213
5214
5215
5216
5217
5218
5219
5219
5220
5221
5222
5223
5224
5225
5226
5227
5228
5229
5229
5230
5231
5232
5233
5234
5235
5236
5237
5238
5239
5239
5240
5241
5242
5243
5244
5245
5246
5247
5248
5249
5249
5250
5251
5252
5253
5254
5255
5256
5257
5258
5259
5259
5260
5261
5262
5263
5264
5265
5266
5267
5268
5269
5269
5270
5271
5272
5273
5274
5275
5276
5277
5278
5279
5279
5280
5281
5282
5283
5284
5285
5286
5287
5288
5289
5289
5290
5291
5292
5293
5294
5295
5296
5297
5298
5299
5299
5300
5301
5302
5303
5304
5305
5306
5307
5308
5309
5309
5310
5311
5312
5313
5314
5315
5316
5317
5318
5319
5319
5320
5321
5322
5323
5324
5325
5326
5327
5328
5329
5329
5330
5331
5332
5333
5334
5335
5336
5337
5338
5339
5339
5340
5341
5342
5343
5344
5345
5346
5347
5348
5349
5349
5350
5351
5352
5353
5354
5355
5356
5357
5358
5359
5359
5360
5361
5362
5363
5364
5365
5366
5367
5368
5369
5369
5370
5371
5372
5373
5374
5375
5376
5377
5378
5379
5379
5380
5381
5382
5383
5384
5385
5386
5387
5388
5389
5389
5390
5391
5392
5393
5394
5395
5396
5397
5398
5399
5399
5400
5401
5402
5403
5404
5405
5406
5407
5408
5409
5409
5410
5411
5412
5413
5414
5415
5416
5417
5418
5419
5419
5420
5421
5422
5423
5424
5425
5426
5427
5428
5429
5429
5430
5431
5432
5433
5434
5435
5436
5437
5438
5439
5439
5440
5441
5442
5443
5444
5445
5446
5447
5448
5449
5449
5450
5451
5452
5453
5454
5455
5456
5457
5458
5459
5459
5460
5461
5462
5463
5464
5465
5466
5467
5468
5469
5469
5470
5471
5472
5473
5474
5475
5476
5477
5478
5479
5479
5480
5481
5482
5483
5484
5485
5486
5487
5488
5489
5489
5490
5491
5492
5493
5494
5495
5496
5497
5498
5498
5499
5499
5500
5501
5502
5503
5504
5505
5506
5507
5508
5509
5509
5510
5511
5512
5513
5514
5515
5516
5517
5518
5519
5519
5520
5521
5522
5523
5524
5525
5526
5527
5528
5529
5529
5530
5531
5532
5533
5534
5535
5536
5537
5538
5539
5539
5540
5541
5542
5543
5544
5545
5546
5547
5548
5549
5549
5550
5551
5552
5553
5554
5555
5556
5557
5558
5559
5559
5560
5561
5562
5563
5564
5565
5566
5567
5568
5569
5569
5570
5571
5572
5573
5574
5575
5576
5577
5578
5579
5579
5580
5581
5582
5583
5584
5585
5586
5587
5588
5589
5589
5590
5591
5592
5593
5594
5595
5596
5597
5598
5598
5599
5599
5600
5601
5602
5603
5604
5605
5606
5607
5608
5609
5609
5610
5611
5612
5613
5614
5615
5616
5617
5618
5619
5619
5620
5621
5622
5623
5624
5625
5626
5627
5628
5629
5629
5630
5631
5632
5633
5634
5635
5636
5637
5638
5639
5639
5640
5641
5642
5643
5644
5645
5646
5647
5648
5649
5649
5650
5651
5652
5653
5654
5655
5656
5657
5658
5659
5659
5660
5661
5662
5663
5664
5665
5666
5667
5668
5669
5669
5670
5671
5672
5673
5674
5675
5676
5677
5678
5679
5679
5680
5681
5682
5683
5684
5685
5686
5687
5688
5689
5689
5690
5691
5692
5693
5694
5695
5696
5697
5698
5698
5699
5699
5700
5701
5702
5703
5704
5705
5706
5707
5708
5709
5709
5710
5711
5712
5713
5714
5715
5716
5717
5718
5719
5719
5720
5721
5722
5723
5724
5725
5726
5727
5728
5729
5729
5730
5731
5732
5733
5734
5735
5736
5737
5738
5739
5739
5740
5741
5742
5743
5744
5745
5746
5747
5748
5749
5749
5750
5751
5752
5753
5754
5755
5756
5757
5758
5759
5759
5760
5761
5762
5763
5764
5765
5766
5767
5768
5769
5769
5770
5771
5772
5773
5774
5775
5776
5777
5778
5779
5779
5780
5781
5782
5783
5784
5785
5786
5787
5788
5789
5789
5790
5791
5792
5793
5794
5795
5796
5797
5798
5798
5799
5799
5800
5801
5802
5803
5804
5805
5806
5807
5808
5809
5809
5810
5811
5812
5813
5814
5815
5816
5817
5818
5819
5819
5820
5821
5822
5823
5824
5825
5826
5827
5828
5829
5829
5830
5831
5832
5833
5834
5835
5836
5837
5838
5839
5839
5840
5841
5842
5843
5844
5845
5846
5847
5848
5849
5849
5850
5851
5852
5853
5854
5855
5856
5857
5858
5859
5859
5860
5861
5862
5863
5864
5865
5866
5867
5868
5869
5869
5870
5871
5872
5873
5874
5875
5876
5877
5878
5879
5879
5880
5881
5882
5883
5884
5885
5886
5887
5888
5889
5889
5890
5891
5892
5893
5894
5895
5896
5897
5898
5898
5899
5899
5900
5901
5902
5903
5904
5905
5906
5907
5908
5909
5909
5910
5911
5912
5913
5914
5915
5916
5917
5918
5919
5919
5920
5921
5922
5923
5924
5925
5926
5927
5928
5929
5929
5930
5931
5932
5933
5934
5935
5936
5937
5938
5939
5939
5940
5941
5942
5943
5944
5945
5946
5947
5948
5949
5949
5950
5951
5952
5953
5954
5955
5956
5957
5958
5959
5959
5960
5961
5962
5963
5964
5965
5966
5967
5968
5969
5969
5970
5971
5972
5973
5974
5975
5976
5977
5978
5979
5979
5980
5981
5982
5983
5984
5985
5986
5987
5988
5989
5989
5990
5991
5992
5993
5994
5995
5996
5997
5998
5999
5999
6000
6001
6002
6003
6004
6005
6006
6007
6008
6009
6009
6010
6011
6012
6013
6014
6015
6016
6017
6018
6019
6019
6020
6021
6022
6023
6024
6025
6026
6027
6028
6029
6029
6030
6031
6032
6033
6034
6035
6036
6037
6038
6039
6039
6040
6041
6042
6043
6044
6045
6046
6047
6048
6049
6049
6050
6051
6052
6053
6054
6055
6056
6057
6058
6059
6059
6060
6061
6062
6063
6064
6065
6066
6067
6068
6069
6069
6070
6071
6072
6073
6074
6075
6076
6077
6078
6079
6079
6080
6081
6082
6083
6084
6085
6086
6087
6088
6089
6089
6090
6091
6092
6093
6094
6095
6096
6097
6098
6098
6099
6099
6100
6101
6102
6103
6104
6105
6106
6107
6108
6109
6109
6110
6111
6112
6113
6114
6115
6116
6117
6118
6119
6119
6120
6121
6122
6123
6124
6125
6126
6127
6128
6129
6129
6130
6131
6132
6133
6134
6135
6136
6137
6138
6139
6139
6140
6141
6142
6143
6144
6145
6146
6147
6148
6149
6149
6150
6151
6152
6153
6154
6155
6156
6157
6158
6159
6159
6160
6161
6162
6163
6164
6165
6166
6167
6168
6169
6169
6170
6171
6172
6173
6174
6175
6176
6177
6178
6179
6179
6180
6181
6182
6183
6184
6185
6186
6187
6188
6189
6189
6190
6191
6192
6193
6194
6195
6196
6197
6198
6198
6199
6199
6200
6201
6202
6203
6204
6205
6206
6207
6208
6209
6209
6210
6211
6212
6213
6214
6215
6216
6217
6218
6219
6219
6220
6221
6222
6223
6224
6225
6226
6227
6228
6229
6229
6230
6231
6232
6233
6234
6235
6236
6237
6238
6239
6239
6240
6241
6242
6243
6244
6245
6246
6247
6248
6249
6249
6250
6251
6252
6253
6254
6255
6256
6257
6258
6259
6259
6260
6261
6262
6263
6264
6265
6266
6267
626
```

You may want to focus on a few definitions in **system_wb32f10x.c**.



```

11  /*=====
12  Define clocks
13  =====*/
14
15
16
17 /* #define MAINCLK_FREQ_HSE */          /* The HSE clock frequency must be 6MHz */
18 /* #define MAINCLK_FREQ_36MHz */        /* The HSE clock frequency must be 6MHz or 8MHz */
19 /* #define MAINCLK_FREQ_48MHz */        /* The HSE clock frequency must be 6MHz or 8MHz */
20 /* #define MAINCLK_FREQ_72MHz */        /* The HSE clock frequency must be 6MHz */
21 /* #define MAINCLK_FREQ_96MHz */        /* The HSE clock frequency must be 6MHz or 8MHz */
22 /* #define MAINCLK_FREQ_128MHz */       /* The HSE clock frequency must be 8MHz */
23
24
25 /*!< Uncomment the following line if you need to relocate your Vector Table in
26 Internal SRAM. */
27 // #define VECT_TAB_SRAM
28 #define VECT_TAB_OFFSET 0x0           /*!< Vector Table base offset field.
29                                         This value must be a multiple of 0x100. */

```

MAINCLK_FREQ_*: These macros define the frequency of the chip master clock after the program is started. You can only choose to define one of them (if none is defined, the chip master clock is MHSI). You can define it at the compiler global predefined. These macro definitions are required for the external crystal oscillator of the chip.

If you are defining **MAINCLK_FREQ_72MHz**, the external crystal frequency of the chip must be 6MHz or 12MHz. (**Note:** the definition of **HSE_VALUE** must be overwrote as well).

VECT_TAB_SRAM: This macro maps the interrupt vector to the SRAM (This macro needs to be defined for projects running in SRAM).

VECT_TAB_OFFSET: This macro is used to set the offset of the starting address for the interrupt vector (Relative to the starting address of Flash or SRAM.).

Revision History

Revision	Date	Description
1.2	2022/7/5	Initial Release

IMPORTANT NOTICE

Information in this document is provided solely in connection with WB products. This document, including any product of WB described in this document (the "Product"), is owned by WB under the intellectual property laws and treaties of the People's Republic of China and other jurisdictions worldwide. Westberry Technology (ChangZhou) Corp., Ltd and its subsidiaries ("WB") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice. WB does not assume any liability arising out of the application or use of any Product described in this document. Purchasers are solely responsible for the choice, selection and use of the WB products and services described herein, and WB assumes no liability whatsoever relating to the choice, selection or use of the WB products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by WB for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

Except for customized products which has been expressly identified in the applicable agreement, the Products are designed, developed or manufactured for ordinary business, industrial, personal, or household applications only. The Products are not designed, intended, or authorized for use as components in systems designed or intended for the operation of weapons, weapons systems, nuclear installations, atomic energy control instruments, combustion control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, life-support devices or systems, other medical devices or systems (including resuscitation equipment and surgical implants), pollution control or hazardous substances management, or other uses where the failure of the device or Product could cause personal injury, death, property or environmental damage.

Resale of WB products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by WB for the WB product or service described herein and shall not create or extend in any manner whatsoever, any liability of WB.

©2022 Westberry Technology (ChangZhou) Corp., Ltd All Rights Reserved