

User Files Migration Guide

RobotWare Paint 6.0



Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page 1
Approved	Take over department		No. of pages 26
Status Draft		Document No.	Rev. ind. 04
 ABB AS, Robotics			

TABLE OF CONTENTS

1. INTRODUCTION.....	4
2. SYSTEM PARAMETERS.....	5
2.1 EIO.....	5
2.1.1 Header.....	5
2.1.2 EIO_UNIT.....	5
2.1.3 EIO_SIGNAL.....	5
2.1.4 EIO_CROSS.....	6
2.1.5 “CommandIO” Unit/Device.....	6
2.2 PROC.....	6
2.3 SYS.....	6
2.4 MOC.....	7
2.5 MMC.....	7
2.6 SIO.....	8
3. PNTRAPID VARIABLES.....	9
3.1 Renamed.....	9
3.2 Access through RobAPI2.....	9
3.3 Access through EIO.....	9
3.4 Removed.....	10
3.5 Present with RMC only.....	10
4. PNTRAPID CONSTANTS.....	11
4.1 Overview.....	11
5. PNTRAPID SIGNALS.....	13
5.1 PLC/External Signals.....	13
5.2 Simulated/Internal Signals.....	13
6. PNTRAPID SUBSCRIPTIONS.....	15
6.1 T_ROB1.....	15
6.2 PntTask.....	15
6.3 MCTask1.....	16
7. IPS CONFIGURATION.....	17
7.1 Syntax.....	17
7.2 File Location.....	17
7.3 Applicator Disable.....	17
8. XML CONFIGURATION.....	18
8.1 kernel.xml.....	18
8.2 mcengine.xml.....	19
8.3 single2k.xml.....	20
8.4 pntpush.xml.....	20

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page 2
Approved	Take over department		No. of pages 26
Status Draft			Rev. ind. 04
		Document No.	

8.5 cbsconf.xml20

8.6 cbsbpass.xml.....20

9. MODULE INITIALIZATION.....21

9.1 T_ROB121

9.2 PntTask.....21

9.3 MCTask1.....21

9.4 Dynamic Initialization22

9.5 Offline Signals.....23

10. FAQ.....24


10.1 How to handle custom XML files?24

10.2 How to handle M10002.mod with different module name?.....24

10.3 How to handle “ProgramLoaded” on conveyor tracking systems?24


10.4 How to convert custom commands?.....25

11. REVISION HISTORY26

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page 3
Approved	Take over department		No. of pages 26
Status Draft		Document No.	Rev. ind. 04
 ABB AS, Robotics			

1. INTRODUCTION

This document provides help in migrating user files from RobotWare 5 to RobotWare 6.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 4
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

2. SYSTEM PARAMETERS

2.1 EIO

2.1.1 Header

All EIO files need to have this header to work with RW6.01 and later:

```
EIO:CFG_1.0:6:1::
```

Or this generic header:

```
EIO:CFG_1.0::
```

Using a header with a version number will cause RobotWare to give warning messages in the elog if the version in the header is known to be incompatible with the current RobotWare version.

2.1.2 EIO_UNIT

“EIO_UNIT” has been phased out.

For IPS / ICI device use “ICI_DEVICE”, with new arguments.

Example of new syntax:

```
ICI_DEVICE:
-Name "DSQC652" -Network "ICI" -Address "192.168.126.200/can1/mac20"
```

Other fieldbus units have new device sections as well.

NOTE: Simulated devices (units) no longer exists.

2.1.3 EIO_SIGNAL

“Unit” has been renamed to “Device”.

“UnitMap” has been renamed to “DeviceMap”


Example of new syntax:

```
-Name "A1Enable" -SignalType "DO" -Device "PIB" -DeviceMap "A1:Enable"
```

NOTE: Simulated signals are defined without any “Device” and “DeviceMap” in RW6, so the “Virtual” bus and associated units have been removed.

Example of simulated signal:

```
-Name "A1Enable" -SignalType "DO"
```

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 5
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

2.1.4 EIO_CROSS

All cross connections now require a "Name".

Example of new syntax:

```
-Name "AppEnabledCross" -Res "AppEnabled" -Act1 "A1Enable"
```

Recommended naming convention is the text in the resultant (Res) with "Cross" appended at the end.

2.1.5 "CommandIO" Unit/Device

In RobotWare 5, all PLC related signals used to be on the "CommandIO" unit, which had the same name regardless of fieldbus type used. This has changed with RW6, since fieldbus types introduces their own "internal" predefined device where the signals must be placed at.

The exception to this rule is the ICI-based CAN gateway nodes, which still device named "CommandIO".

This means custom PLC signals may need to be moved to the new "internal" device, depending on the type used.

Fieldbus Type	Predefined Device in EIO
Ethernet I/P AnyBus (DSQC669)	EN_Internal_Anybus
Profinet AnyBus (DSQC688)	PN_Internal_Anybus
Profibus AnyBus (DSQC667)	PB_Internal_Anybus
DeviceNet AnyBus (DSQC1004)	DN_Internal_Anybus
Ethernet I/P SW-Stack	EN_Internal_Device
Profinet SW-Stack	PN_Internal_Device


2.2 PROC

No changes to existing syntax.

New sections added, refer to sections on PntRapid subscriptions and XML configuration for more information.

2.3 SYS

No changes.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 6
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

2.4 MOC

Several attributes have been removed because they are obsolete.

The following is a list of attributes commonly found in public MOC that must be removed:

MOTION_SYSTEM:

- max_speed_at_power_down

MOTION_PLANNER:

- circle_speed_priority
- cpu_load_added_to_dsp
- cpu_load_equalization
- dyn_ipol_decbuf_type
- dyn_ipol_opt_path_strength
- micro_ipol_type
- path_step_adjust_type
- perpendicular_acc_ratio
- two_steps_interp_cnv_type
- use_for_synchronization

ARM_CHECK_POINT:

- checktype

ROBOT:

- conveyor_tool_change_mode
- linear_jog_allowed
- no_joints_prepcalc
- serial_number_high_part
- serial_number_low_part
- use_kinematic_corvec
- use_six_axis_corvec
- use_smb_memory
- use_tm2_impl

MOTION_SUP:

- static_power_up_position_ratio

CURRENT_CONTROLLER:


- dc_margin_gain
- dc_margin_lpf
- set_id_lpf

SINGLE_TYPE:

- par_id_version

2.5 MMC


No changes.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 7
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

2.6 SIO

Several changes introduced in later RW6 versions.

Most are related to setup of fieldbus networks, check individual documentation for fieldbuses for more information.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 8
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

3. PNTRAPID VARIABLES

3.1 Renamed

The following variables have been renamed, but retain their original purpose.

RW5 Name	RW6 Name	Comment
nCurrProgIndex	nProgramIndex	Program index for current job in T_ROB1.
nCurrMtrlIndex	nMaterialIndex	Material index for current job in T_ROB1.
nCurrJobOption	nOption1	First program option for current job in T_ROB1.
nCurrJobID	nJobID	Job ID for current job in T_ROB1.
stCurrModule	stProgramModule	Module name(s) for current job in T_ROB1. In case of segmentation, the name is updated for each segment.
nTipCleanInterval	nTCIOVERRIDE	In RW6, the variable overrides current interval only.

3.2 Access through RobAPI2


The following variables are no longer accessible from RAPID. They are primarily used for visualization, hence exported through RobAPI2 instead.

RW5 Name	RW6 RobAPI2 URL	Comment
nLastCycleTime	/rw/paint/cyclelog	
nJobQueueSize	/rw/paint/queue	
JobQueue	/rw/paint/queue	
nRobotState	/rw/paint/cyclestate	
nProcessState	/rw/paint/mcenginestate	
LastCycReport	/rw/paint/cyclelog	
nCavities	/rw/paint/cavity	Variable still present if using RAPID material change.
nCavityMtrlIndex	/rw/paint/cavity	Variable still present if using RAPID material change.
stCavityName	/rw/paint/cavity	Variable still present if using RAPID material change.
stCavitySequence	/rw/paint/cavity	Variable still present if using RAPID material change.

3.3 Access through EIO

The following variables are no longer used, instead the status is gotten from IPS directly through EIO.

RW5 Name	RW6 EIO Signal	Comment
nApplicators	A1Enable, A2Enable, etc.	Amount of defined applicator enable signals.
nApplicatorState	A1Enable & A1Error	

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page 9 No. of pages 26
Approved	Take over department		
Status Draft		Document No.	Rev. ind. 04
 ABB AS, Robotics			

3.4 Removed


The following variables have been removed and have no counterpart in RW6.

RW5 Name	Comment
nCurrMtrlOption1	Material options not accessible in T_ROB1 for current job.
nCurrMtrlOption2	Material options not accessible in T_ROB1 for current job.
bCurrExpedited	Obsolete.
nDirectProgIndex	Obsolete.
nDirectJobOption	Obsolete.
bDirectExpedited	Obsolete
stDirectModule	Obsolete
nMasterID	Master function in RW6 uses common write access, shared with RobotStudio, etc. Use "MasterGranted" EIO signal to check master status for PLC. Detailed mastership information can be fetched with RobAPI2.
nGuiSocketPort	TCP socket interface replaced by RobAPI2.
CurrCycReport	Obsolete.
bImmediateFactor	Brush factors not saved in RW6.
bSkipBrushFactor	Brush factors not saved in RW6.
nCurrentFactor	Brush factors not saved in RW6.
nGlobalFactor	Brush factors not saved in RW6.
nMaterialFactor	Brush factors not saved in RW6.

3.5 Present with RMC only

The following variables are only present when running RAPID material change. (Not present with Python material change.)

RW5 Name	Comment
stCavityGroup	
nSelMtrlIndex	
nSelMtrlOption1	
nSelMtrlOption2	
nSelJobOption	Present, but never updated.
nMCState	
nMCSubStates	
nMCSkippedCount	
nAForceInterval	

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE	Page 10
Approved	Take over department		No. of pages 26
Status Draft		ROBOTWARE PAINT 6.0	Rev. ind. 04
 ABB AS, Robotics		Document No.	

4. PNTRAPID CONSTANTS

4.1 Overview

By default none of the previous constants in PntRapid will exist in the T_ROB1 task.


When installing RAPID material change, some constants will be available in all tasks.

NOTE: If custom code is to be used without RAPID material change, make sure this does not reference any of the constants. Typical example is UNDEFINED_IO_SIG which may be used by custom code in T_ROB1.


This table lists all the constants used globally in constant.sys in RW5.

Missing constants should either be substituted directly for their value or re-defined in a new custom module.

RW5 Name	Value	RW6 Comment/Action
CMD_OK	0	Available in CmdTask, where it is supposed to be used.
CMD_FAILED	-1	Available in CmdTask, where it is supposed to be used.
CMD_UNKNOWN	-2	Available in CmdTask, where it is supposed to be used.
CMD_NOT_MASTER	-3	Available in CmdTask, where it is supposed to be used.
CMD_TIMEOUT	-4	Available in CmdTask, where it is supposed to be used.
CMD_INVALID_VAL	-5	Available in CmdTask, where it is supposed to be used.
CMD_ILL_SYSMODE	-6	Available in CmdTask, where it is supposed to be used.
CMD_RES_UNAVAIL	-7	Available in CmdTask, where it is supposed to be used.
HOMEPOS_MODULE	10001	Removed.
MCPOS_MODULE	10002	Removed. Get from PROC.cfg instead, as "MCPosModule".
SEGMENT_NDX	"segments.ndx"	Removed. Get from PROC.cfg instead, as "ProgramIndexFile".
NONE_MODULE	"none"	Removed.
HOME_ROOT	"HOME:/"	Available with RAPID material change only.
SYSTEM_ROOT	"INTERNAL:/ pntrapid/"	Removed.
PROGRAM_DIR	"programs/"	Available with RAPID material change only.
LOG_DIR	"logs/"	Available with RAPID material change only.
PERS_CONFIG_DIR	"robdata/"	Available with RAPID material change only.
CUST_MAIN_DIR	"custmain/"	Removed.
CUST_PNT_DIR	"custpnt/"	Removed.
CUST_MC_DIR	"custmc/"	Available with RAPID material change only.
MODULE_EXT	".mod"	Available with RAPID material change only.
SYSMODULE_EXT	".sys"	Available with RAPID material change only.
IGNORE_MC	0	Available with RAPID material change only.
UNDEFINED_IO_SIG	-1000000	Available with RAPID material change only.
SYSTEM_PROC_NAME	"main"	Removed.
MAX_APPLICATORS	4	Available with RAPID material change only.

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions	
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 11
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
		Document No.	Rev. ind. 04

stMedia	"HOME:"	Removed.
ST_EMPTY_STRING	""	Removed.
ST_PRG_EXT	".mod"	Removed.
tpLow	0	Removed.
tpHigh	1	Removed.
tpEdge	2	Removed.
SYS_UNINITIALIZED	0	Removed.
SYS_DISABLED	1	Removed.
SYS_STOPPED	2	Removed.
SYS_READY	3	Removed.
SYS_IN_PROG_STOP	4	Removed.
SYS_IN_PROG_RUN	5	Removed.

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page 12
Approved	Take over department		No. of pages 26
Status Draft		Document No.	Rev. ind. 04
 ABB AS, Robotics			

5. PNTRAPID SIGNALS


5.1 PLC/External Signals

Please refer to the “IO Protocol Migration Guide” for changes on all signals going to external devices.
The selected protocol affects which signals are available and not.


5.2 Simulated/Internal Signals

This table lists all the signal names that have been removed. Some have simply changed names, others are available on if a certain IO protocol is installed.

RW5 Name	RW6 Comment/Action
sdoAutoOn	Available on certain IO protocols as “AutomaticMode”.
sdoEmStop	Available on certain IO protocols as “EmergencyStop”.
sdoError	Name changed to “sdoRobotError”.
sdoMotOnState	Available on certain IO protocols as “MotorIsOn”.
sdoRunchOk	Available on certain IO protocols as “RunChainClosed”.
doModeChangeAck	Name changed to “sdoAckAutoMode”.
sdoStart	Removed. Consider using “sdoMotOnStart” instead.
sdoSysReset	Removed.
diModeChangeAck	Removed.
doAutoMode	Removed. Use “sdoAutoOn” instead.
doCmdExecuting	Removed.
doCmdReady	Removed.
doDirectModule	Removed.
doExStart	Removed.
doGUICmdReady	Removed.
doInitialized	Removed.
doIntCommand	Removed.
doJobInProgress	Available on certain IO protocols as “JobInProgress”.
doMainInMC	Removed.
doPLCCmdReady	Removed.
doPaintBackup	Removed.
doQueueExpedited	Removed.
doQueueNotEmpty	Removed. Check status of inverted “doQueueEmpty” instead.
doRapidError	Removed.
doSpyStart	Removed. Consider starting SpyLog with RAPID instructions instead.
doSpyStop	Removed.

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions	
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 13
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

doStartVClock	Removed.
doTPUCmdReady	Removed.
doUpdateVClock	Removed.
sdoManFullSpeed	Removed. Consider using OpMode() RAPID function instead.
sdoManRedSpeed	Removed. Consider using OpMode() RAPID function instead.
sdoSwitchInAuto	Name changed to "doSwitchInAuto".

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page 14
Approved	Take over department		No. of pages 26
Status Draft		Document No.	Rev. ind. 04
 ABB AS, Robotics			

6. PNTRAPID SUBSCRIPTIONS

6.1 T_ROB1

Subscriptions in T_ROB1 are now set up with PROC system parameter configuration.

RW5 Event	RW6 Action
QUEUE_POP_MAIN	Use "PRE_MAIN" with higher priority or "MC_MAIN" event.
PRE_MAIN	Continue using "PRE_MAIN" event.
POST_MAIN	Continue using "POST_MAIN" event.

Example of PROC system parameter syntax:

```
PW_EVENT_HOOKS:
-Routine "PreMainCustom" -Event "PRE_MAIN" -Priority 55
-Routine "PostMainCustom" -Event "POST_MAIN"
```

Refer to "Paint Commands and PLC Interface" manual for more information.

6.2 PntTask

RW6 has no "PntTask" but rather a "CmdTask" that serves a similar purpose.


It is not possible to set up events, but it is possible to set up command hooks on all paint commands.

RW5 Event	RW6 Action
RESET_ERR_PATASK	Add command hook on paint command 101 .
PROCENA_PATASK	Add command hook on paint command 302 .
QUEUECLR_PATASK	Add command hook on paint command 416 .
RECOVER_PATASK	Add command hook on paint command 107 .
TOGGLE_PATASK	Has no direct counterpart, add command hook(s) on relevant paint command(s).
STARTCMD_PATASK	Add command hook on paint command 103 .
QUEUEAPP_PATASK	Add command hook on paint command 421 .

Example of command hook in RAPID language, defined in "CmdTask" scope:

```
proc Cmd302PostHook(num nInParam{*})
  ! Additional RAPID code for applicator enable.
endproc
```


Refer to "Paint Commands and PLC Interface" manual for more information.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 15
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

6.3 MCTask1

Only applicable when running RAPID material change.

The subscription functionality has been copied directly from RW5, no changes necessary.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 16
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

7. IPS CONFIGURATION

7.1 Syntax

IPS configuration syntax is identical to ICI syntax used with RW5.14.03 and later.

Earlier IPS configuration needs to be adapted to ICI syntax, refer to TSI for RW5.15 for more information.

7.2 File Location

All IPS configuration is now stored on main computer.

All files from PIB moved into HOME:/ipsdata/node1/

Files for other nodes moved into HOME:/ipsdata/node<n>/ where <n> represents MAC id for node.

7.3 Applicator Disable

Disabling of applicator moved from RobotWare RAPID code to IPS configuration in RW6.

A1 should be disabled when emergency stop occurs.

A1 should be disabled when runchain is opened.


The following IPS configuration needs to be added (into e.g. A1.cfg) for this to work:

LOGICDEVICE:

```
-name "EmyIsOff" -use_input "Safety/Inport1:ES1" \
  -use_input "Safety/Inport1:ES2" -use_input "A1:Enable"
-name "RunChainIsOff" -use_input "Safety/Inport8:ReadyForMotorOn" \
  -use_input "A1:Enable"
```

CONNECTION:


```
-from "EmyIsOff:Value" -to "A1:Enable"
-from "RunChainIsOff:Value" -to "A1:Enable"
```

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 17
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

8. XML CONFIGURATION

8.1 kernel.xml

RW5 Entry	RW6 Action
ExternalStart	System parameter: /PROC/PW_SERVICES_CONFIG/ExternalStart
ProgramCache	System parameter: /PROC/PW_SERVICES_CONFIG/ProgramCache
SkipLoadFailure	System parameter: /PROC/PW_SERVICES_CONFIG/LoadFailureModule
BrushMapType	System parameter: /PROC/PW_SERVICES_CONFIG/BrushMapFormula (NOTE: Formula uses different rules.)
StartReadyBrush	Function removed in RW6, can be implemented by hook on paint command 103.
SegmentDirect	Not used in RW6, segment file always read in "direct" mode.
HomeBeforeStart	Function removed in RW6, can be implemented in PRE_MAIN event if needed.
ProductionLog	System parameter: /PROC/PW_SERVICES_CONFIG/ProdLogSize (NOTE: Set to 0 if disabled.)
CommandLog	System parameter: /PROC/PW_SERVICES_CONFIG/CmdLogSize (NOTE: Set to 0 if disabled.)
ExpediteBegin	System parameter: /PROC/PW_SERVICES_CONFIG/JobQueueExpediteBegin
ExpediteEnd	System parameter: /PROC/PW_SERVICES_CONFIG/JobQueueExpediteEnd
DebugProdLog	Debug logs activated directly in MC console for RW6.
DebugCmdLog	Debug logs activated directly in MC console for RW6.
OutputForDebug	Debug logs activated directly in MC console for RW6.
CTSyncInfo	Change value of RAPID variable bCTSyncInfo directly.
PreMainBFactor	Function removed in RW6. (All bruhsfactors set directly.)


Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions	
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 18
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

8.2 mcengine.xml

Actions differs depending on if RAPID material change (RMC) or Python material change (PyMC) is used.

RW5 Entry	RW6 Action with RMC
CleanIndex	System parameter: /PROC/PW_SERVICES_CONFIG/MCEngine_CleanIndex
FillGradeDefault	System parameter: /PROC/PW_SERVICES_CONFIG/MCEngine_FillGradeDefault
CInGradeDefault	System parameter: /PROC/PW_SERVICES_CONFIG/MCEngine_CInGradeDefault
TipCleanInterval	System parameter: /PROC/PW_SERVICES_CONFIG/TipCleanInterval
TipCleanSequence	System parameter: /PROC/PW_SERVICES_CONFIG/TipCleanModule
AForceInterval	System parameter: /PROC/PW_SERVICES_CONFIG/MCEngine_AForceInterval
RecovOnRobStart	Always activated in RW6.
SupEnaOnAppEna	Material supply bit removed in RW6. (Send material 0 to skip material change.)
DebugEventLog	System parameter: /PROC/PW_SERVICES_CONFIG/MCEngine_DebugEventLog
DebugStateLog	System parameter: /PROC/PW_SERVICES_CONFIG/MCEngine_DebugStateLog

RW5 Entry	RW6 Action with PyMC
CleanIndex	Index file: s1.ndx
FillGradeDefault	Index file: s1c1.ndx, s1c2.ndx, etc.
CInGradeDefault	Index file: s1c1.ndx, s1c2.ndx, etc.
TipCleanInterval	System parameter: /PROC/PW_SERVICES_CONFIG/TipCleanInterval
TipCleanSequence	System parameter: /PROC/PW_SERVICES_CONFIG/TipCleanModule
AForceInterval	Not implemented for PyMC.
RecovOnRobStart	Always activated in RW6.
SupEnaOnAppEna	Material supply bit removed in RW6. (Send material 0 to skip material change.)
DebugEventLog	Configuration file: mc.xml
DebugStateLog	Configuration file: mc.xml

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page
Approved	Take over department		19
Status Draft			No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

8.3 single2k.xml

All entries moved to PROC system parameter configuration.
 Prefixed with "Single2K_".

8.4 pntpush.xml


All entries moved to PROC system parameter configuration.
 Prefixed with "PntPush_".

8.5 cbsconf.xml

All entries moved to PROC system parameter configuration.
 Prefixed with "CBSConf_".

8.6 cbsbpass.xml

All entries moved to PROC system parameter configuration.
 Prefixed with "CBSBPass_".

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page
Approved	Take over department		20
Status Draft			No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

9. MODULE INITIALIZATION

9.1 T_ROB1

When “start at main” is issued, the “InitCustMain” routine will be automatically called. By default, this is located in the custmain.sys module.

Any other modules “Init” routines can be called from “InitCustMain”. Remember that late binding can be used to provide better modularity, like the example in section [Dynamic Initialization](#).

It is also possible to use the “PowerOn” event routine, which is specified in the controller system parameters.

9.2 PntTask

RW6 has no “PntTask” but rather a “CmdTask” that serves a similar purpose.

When “CmdTask” is started, the “InitCustCmd” routine will be automatically called. By default, this is located in the custcmd.sys module.


Any other modules “Init” routines can be called from “InitCustCmd”. Remember that late binding can be used to provide better modularity, like the example in section [Dynamic Initialization](#).

It is also possible to use the “PowerOn” event routine, which is specified in the controller system parameters.

9.3 MCTask1

Only applicable when running RAPID material change.

Because the subscription functionality has been copied directly from RW5, this means that all modules related to material change has an “Init<ModuleName>” routine which will be called automatically at startup.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 21
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

9.4 Dynamic Initialization

To get similar functionality as with RW5's subscription function for T_ROB1 and CmdTask, the following procedure may be added into custmain.sys and/or custcmd.sys:


```
local proc CallInit(string stDirectory)
  var string stFileName;
  var dir dDirectory;

  Opendir dDirectory, stDirectory;
  while ReadDir(dDirectory, stFileName) do
    stFileName := StrMap(stFileName, STR_UPPER, STR_LOWER);
    if StrMatch(stFileName, 1, ".sys") < StrLen(stFileName) then
      %"Init" + StrPart(stFileName, 1, StrFind(stFileName, 1, ".") - 1)%;
    endif
  endwhile
  Closedir dDirectory;
error
  if errno = ERR_REFUNKPRC or errno = ERR_CALLPROC then
    ErrWrite "Init Error", "File " + stFileName + " is missing init routine or not loaded.";
    trynext;
  endif
endproc
```

It can then be called from from "InitCustMain" and/or "InitCustCmd" like this example:

```
proc InitCustMain()
  CallInit "HOME:/robdata/custmain";
endproc
```

Considering the previous example, the CallInit() function will look modules inside the HOME:/robdata/custmain/ directory and call the "Init<ModuleName>" for each one.

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE	Page 22
Approved	Take over department		No. of pages 26
Status Draft		ROBOTWARE PAINT 6.0	Rev. ind. 04
 ABB AS, Robotics		Document No.	

9.5 Offline Signals

Because RobotWare (and RAPID tasks) will start before IPS has finished loading configuration, some EIO signals may be in “offline” state during startup of the system.

Protection needs to be added for this, as interacting with an offline signal will cause an error in the RAPID code that attempts it.


When using RAPID material change, the following procedure is already included by default in MCTask1:

```
func bool bSignalOnline(string stSignal)
  var num nValue;
  nValue := GetSignal(stSignal);
  return true;
error
  if errno = ERR_SIG_INVALID then
    SkipWarn;
  endif
  return false;
endfunc
```

For other tasks, a similar function needs to be added manually.

Suggested usage of the function is as follows in conjunction with the WaitUntil RAPID instruction:

```
WaitUntil bSignalOnline("A1Enable") \MaxTime := 60 \TimeFlag := bTimeOut;
```

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 23
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

10. FAQ

10.1 How to handle custom XML files?

The best suggestion is to move all entries from custom XML files into the “Paint Services Configuration” section in PROC.cfg. This gives the benefits of working better with regards to backup/restore.

If RAPID material change is installed, it is possible to call the “stPntRapidOption” function like before, since this acts as a wrapper around PROC.cfg in RW6, otherwise, the regular “ReadCfgData” RAPID instruction may be used to fetch the configuration.

Remember that system parameters require a restart for changes to take effect. If any XML options needs to be changed run-time, it is better to add these options as persistent RAPID variables instead. They can then be manipulated on the fly by any RobAPI client, like the IRC5 OPC server, RobView5, etc. However, it may be a good idea to keep the option in PROC.cfg and use this to set a default value to the RAPID variable at startup.

A function like this can be used to read an option from PROC.cfg manually:

```
local func string stReadOption(string stName)
    var string stValue;
    ReadCfgData "/PROC/PW_SERVICES_CONFIG/" + stName, "Value", stValue;
    return stValue;
error
    return "";
endfunc
```

10.2 How to handle M10002.mod with different module name?

Change the “MCPoSModule” system parameter in PROC.cfg to the desired module name.


If the module will also be called directly, then a mapping between index 10002 and the new name can be added in segments.ndx as before, and no additional settings are required.

10.3 How to handle “ProgramLoaded” on conveyor tracking systems?

RW5 had a “bonus feature” where the “ProgramLoaded” status signal to the PLC behaved differently when running conveyor tracking instead of “External Start”.

This has been removed in RW6 because it breaks compatibility with the standard protocol.

There is a separate signal named “ObjConnected” which serves the same purpose; for the PLC to see if the object is connected or not.

Prepared K Erga, 110316	Responsible department NOFAC	Description	Technical Provisions
Approved	Take over department	USER FILES MIGRATION GUIDE	Page 24
Status Draft		ROBOTWARE PAINT 6.0	No. of pages 26
 ABB AS, Robotics		Document No.	Rev. ind. 04

10.4 How to convert custom commands?


Custom commands may be converted to the new format by doing more or less a search and replace.

First of all the new procedure declaration looks like this:

```
proc Cmd<n>(num nInParam{*}, inout num nResult, inout num nOutData{*})
```


Input params and output parameters can be changed according to this table:

RW5 Name	RW6 Name
nInParams{1}	N/A (Master ID, not used in RW6.)
nInParams{2} ► nInParams{10}	nInParam{1} ► nInParam{9}
N/A (Not available in RW5.)	nInParam{10}
nOutParams{1}	nResult
nOutParams{2} ► nOutParams{10}	nOutData{1} ► nOutData{9}
N/A (Not available in RW5.)	nOutData{10}
stInParams	N/A (Strings not supported in RW6 commands.)
stOutParams	N/A (Strings not supported in RW6 commands.)

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE	Page 25
Approved	Take over department		No. of pages 26
Status Draft		ROBOTWARE PAINT 6.0	Rev. ind. 04
 ABB AS, Robotics		Document No.	

11. REVISION HISTORY

Rev	Date	Author	Description
01	20/10-2015	KE	Initial version.
02	2/12-2015	KE	Added FAQ and Module Initializaion sections. Added information on simulated signals.
03	22/1-2016	KE	Added information and clarifications after review with USABB. Added PntRapid Constants and Signals sections. Changed misleading SIO.cfg information based on updates in RW6.
04	11/3-2016	KE	Corrected naming mistake for RunChainClosed in simulated/internal signals section. Added additional information regarding nMasterID.

Prepared K Erga, 110316	Responsible department NOFAC	Description Technical Provisions USER FILES MIGRATION GUIDE ROBOTWARE PAINT 6.0	Page 26
Approved	Take over department		No. of pages 26
Status Draft		Document No.	Rev. ind. 04
 ABB AS, Robotics			