Method Cycle	Recommended PAL Parameters: Split Injection	On-Column Injection PTV Inject Cold	Packed Columns Flush Vaporising
Liquid			
CYCLE	GC -Inj	GC -Inj	GC -Inj
SYRINGE	10µl	10µl	10µl
Sample Volume	1.0µl	1.0µl	1.0µl
Air Volume	0.5 to 1.0µl	0.5 to 1.0µl	0.5 to 1.0µl
Pre Cln Slv1	3	3	3
Pre Cln Slv2	0	0	0
Pre Cln Spl	2	2	2
Fill Volume	5µl	5µl	5µl
Fill Speed	2µl/s	2µl/s	2µl/s
Fill Strokes	5	5	5
Pullup Del	5 sec	5 sec	5 sec
Inject to	GC Inj 1	GC Inj 1	GC Inj 1
Inject Speed	50µl/s	1 to 5µl/s	5 to 20µl/s
Pre Inj Del	0 ms	0 ms	0 ms
Pst Inj Del	0 ms	3 to 5 sec	5 to 20 sec
Pst Cln Slv1	3	3	3
Pst Cln Slv2	0	0	0

- Eject Speed for 10µl Syringe: 30 -50µl/s (Utilities / Syringe)
- Pre Clean Solvent 2 is used for Samples with components of extremly different polarity.
- Pre Injection Delay is used for highly viscous samples. Length of time the needle will be heated up in hot injector.
- Needle Penetration Injector (Utilities / Injector). Value differs from injector manufacturer to manufacturer.

Method Cycle	Recommended PAL Method Parameters
Headspace	
CYCLE	HS - Inj
SYRINGE	1.0 or 2.5 HS
Sample Volume	500µl
Incubat Temp	35 to 200°C
Incubat Time	Note 1
Agi Speed	250 rpm
Agi On Time	5 sec
Agi Off Time	2 sec
Syringe Temp	35 to 150°C
Fill Speed	100 to 200µl/s
Pullup Del	10 to 20 sec
Inject to	GC Inj 1
Inject Speed	250 - 500µl/s
Pre Inj Del	0 ms
Pst Inj Del	10 to 30 sec
Syr Flushing	60 to 120 sec
GC-Runtime	Note 2

Incubation Temperature:
Value depends on application. Consider boiling piont of solvent.

Note 1: Incubation Time:
The incubation time has to be established with method development.

Syringe Temperature:
Value depends on application. Usually same or similar temperature as selected for Agitator. Use extra Syringes for different applications / temperatures.

Note 2: GC Runtime:
GC - Runtime, Time needed for GC from Ready -Start until Ready-Statous is reached again (Cycle Time).

Safety Warning:
Dry Sample may contain humidity (e.g. soil). 10% water heated to 200°C develops an extreme high pressure in the sample vial.

Method Cycle	Recommended PAL Parameters: Split Injection	On-Column Injection PTV Inject Cold	Packed Columns Flush Vaporising
Sandwich			
CYCLE	GC -InjS	GC -InjS	GC -InjS
SYRINGE	10µl	10µl	10µl
Sample Volume	0.2 to 1µl	0.2 to 1µl	0.2 to 2µl
Solvent Plug	0.5 to1µl	0.5 to1µl	0.5 to1µl
Slv Source	Wash	Wash	Wash
IntStandard	0 to 1µl	0 to 1µl	0 to 1µl
Std Source	Standard	Standard	Standard
Air Gap(s)	0.5 to 1.0µl	0.5 to 1.0µl	0.5 to 1.0µl
AirVolumeNdl	0.8 to 1.0µl	0.8 to 1.0µl	0.8 to 1.0µl
Pre Cln Slv1	3	3	3
Pre Cln Slv2	0	0	0
Pre Cln Spl	2	2	2
Fill Speed	2µl/s	2µl/s	2µl/sec
Pullup Del	3 to 5 sec	3 to 5 sec	3 to 5 sec
Inject to	GC Inj 1	GC Inj 1	GC Inj 1
Inject Speed	30 - 50µl/s	1 - 5µl/s	5 - 20µl/s
Pre Inj Del	0 ms	0 ms	0 ms
Pst Inj Del	0 ms	3 to 5 sec	5 to 20 sec
Pst Cln Slv1	3	3	3
Pst Cln Slv2	0	0	0

- Sandwich Cycle: Mainly used to inject sample Volumes < 1.0µl with a 10µl Standard Syringe.

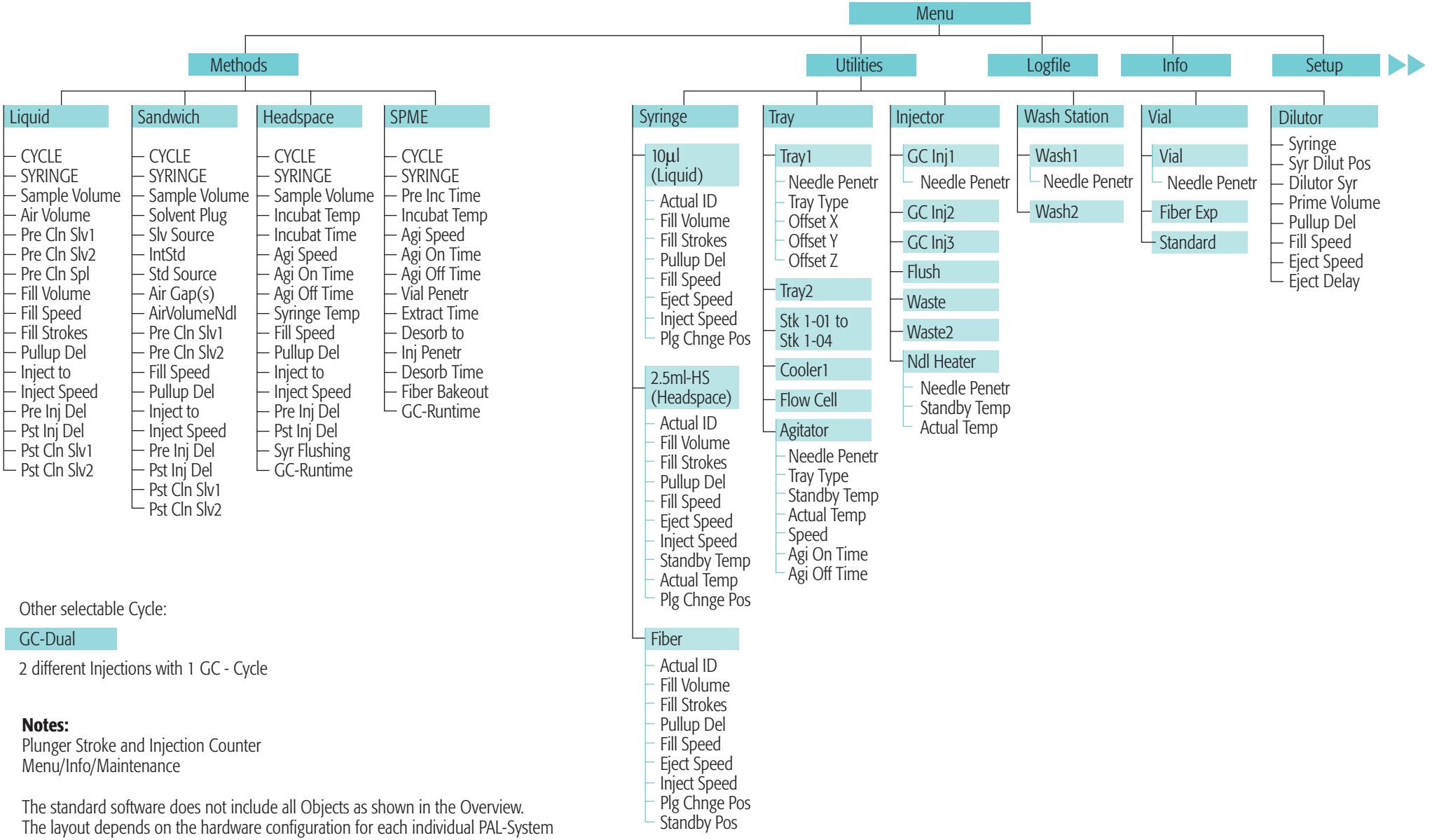
Solvent Plug: Select Source vial e.g. Position "Wash" from Wash Station
Intstd: Select Source Vial for Internal Standard or Reagent Solution e.g. Position "Standard" from Wash Station, Internal Standard will be added in the Syringe (not from one sample solution)
Reagent: Example Esterification of organic acids spontenously in hot injector

Method Cycle	Recommended PAL Method Parameters	Remarks
SPME		
CYCLE	SPME	
SYRINGE	Fiber	
Pre Inc Time	0 or several minutes	Pre Incubation Time to equilibrate Sample before Fiber is inserted
Incubat Temp	35 to 200°C	Application and Fiber dependent
Agi Speed	250 to 750 rpm	Speed for Pre-Incubation Process only
Agi On Time	5 sec	On time for Pre-Incubation Process and Extract Time
Agi Off Time	2 sec	Off time for Pre-Incubation Process and Extract Time
Vial Penetr	22 to 31mm	Adjust Sample Volume in Vial accordingly
Extract Time	open	Application dependend Method development (Ab-Adsorbtion)
Desorb to	GC Inj 1	
Inj Penetr	35 to 45mm	Depends on type of injector
Desorb Time	2 to 5 min	Thermal Desorbtion within msec, longer time for fiber cleaning
Fiber Bakeout	0	If time is > 0: Fiber Conditioning Station will be used for cleaning
GC-Runtime	open	GC Cycle Time From "ready-to-ready" statous

Part No.: PAL FirmOverCombi

COMBI PAL Firmware Overview

...CTC ANALYTICS



Other selectable Cycle:

GC-Dual

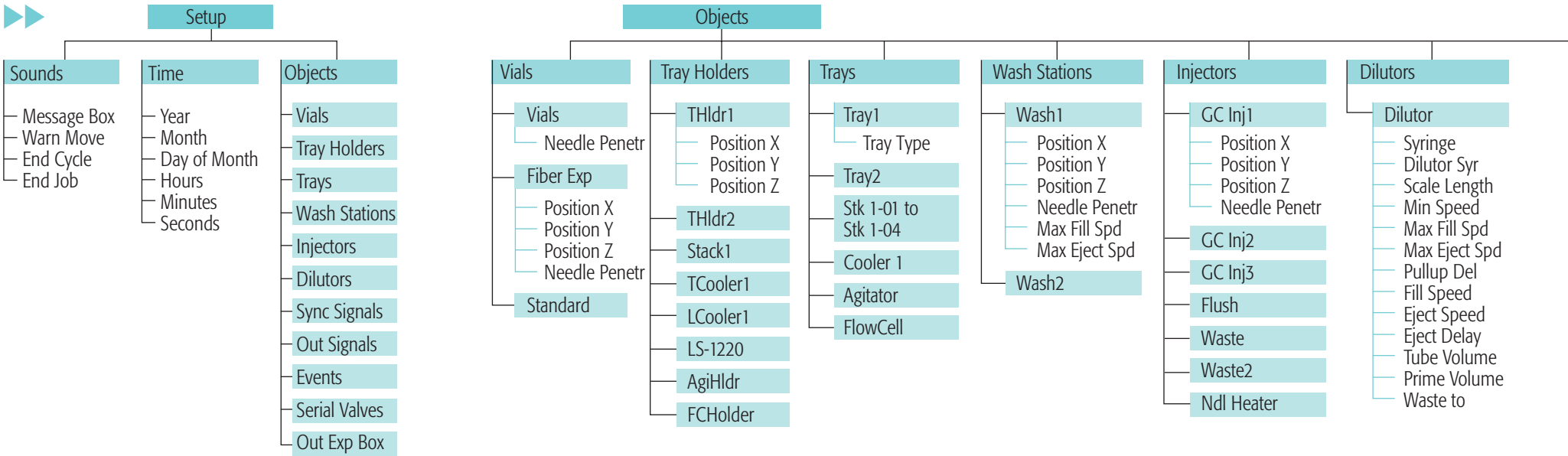
2 different Injections with 1 GC - Cycle

Notes:
Plunger Stroke and Injection Counter
Menu/Info/Maintenance

The standard software does not include all Objects as shown in the Overview.
The layout depends on the hardware configuration for each individual PAL-System

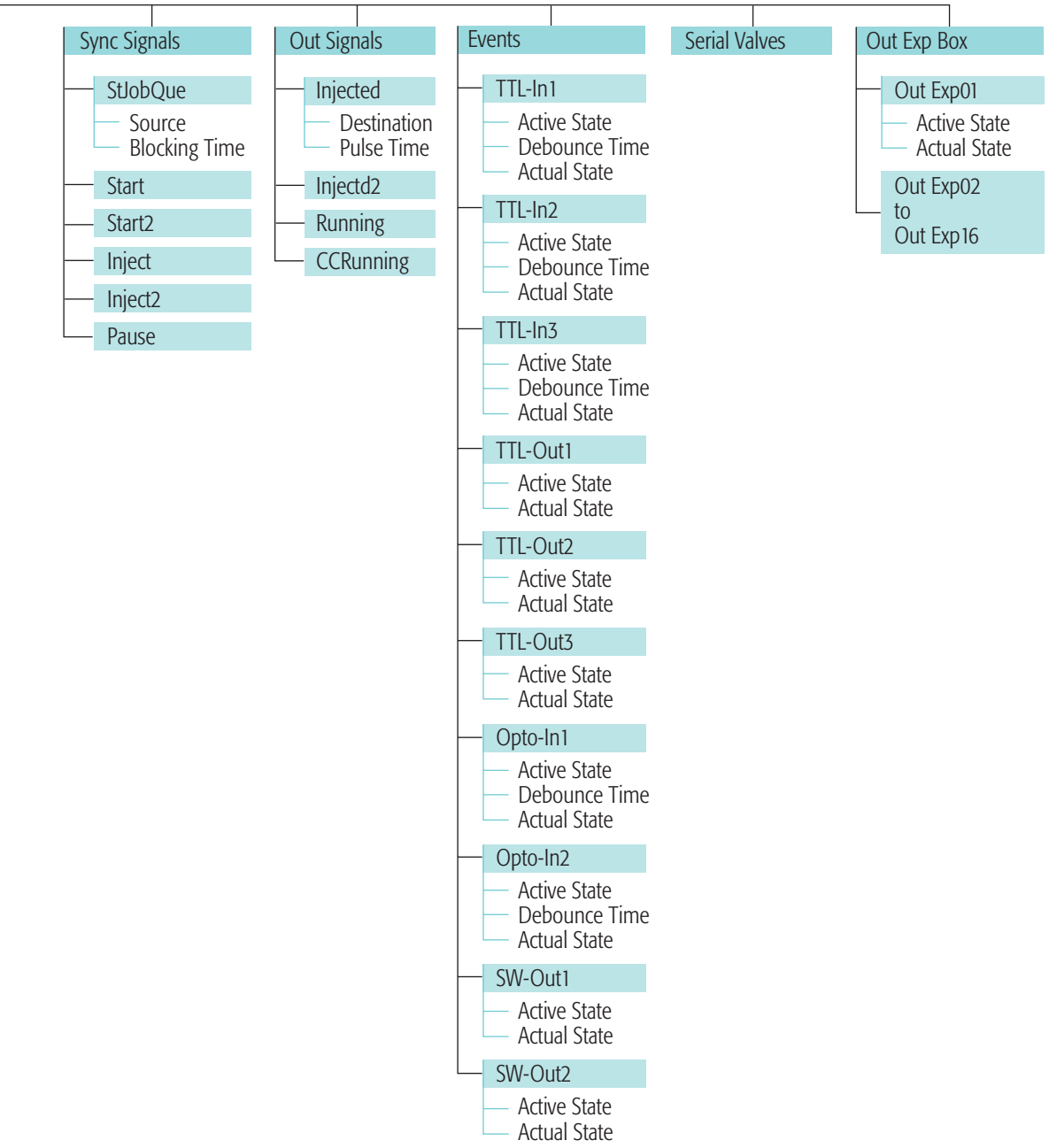
Revision F / Firmware 2.5.2 / October 2006

COMBI PAL Objects



Note:
The standard software does not include all Objects as shown in the Overview. The layout depends on the hardware configuration for each individual PAL-System

Revision F / Firmware 2.5.2 / October 2006


Sync Signals
StJobQue
Source
Blocking Time
Start
Start2
Inject
Inject2
Pause
Out Signals
Injected
Destination
Pulse Time
Injectd2
Running
CCRunning
Events
TTL-In1
Active State
Debounce Time
Actual State
TTL-In2
Active State
Debounce Time
Actual State
TTL-In3
Active State
Debounce Time
Actual State
TTL-Out1
Active State
Actual State
TTL-Out2
Active State
Actual State
TTL-Out3
Active State
Actual State
Opto-In1
Active State
Debounce Time
Actual State
Opto-In2
Active State
Debounce Time
Actual State
SW-Out1
Active State
Actual State
SW-Out2
Active State
Actual State
Serial Valves
Out Exp Box
Out Exp01
Active State
Actual State
Out Exp02
to
Out Exp16

Method Cycle	Recommended PAL Parameters Split Injection	On-Column Injection PTV Inject Cold	Packed Columns Flush Vaporising
Liquid			
CYCLE	GC -Inj	GC -Inj	GC -Inj
SYRINGE	10µl	10µl	10µl
Sample Volume	1.0µl	1.0µl	1.0µl
Air Volume	0.5 to 1.0µl	0.5 to 1.0µl	0.5 to 1.0µl
Pre Cln Slv1	3	3	3
Pre Cln Slv2	0	0	0
Pre Cln Spl	2	2	2
Fill Volume	5µl	5µl	5µl
Fill Speed	2µl/s	2µl/s	2µl/s
Fill Strokes	5	5	5
Pullup Del	5 sec	5 sec	5 sec
Inject to	GC Inj 1	GC Inj 1	GC Inj 1
Inject Speed	50µl/s	1 to 5µl/s	5 to 20µl/s
Pre Inj Del	0 ms	0 ms	0 ms
Pst Inj Del	0 ms	3 to 5 sec	5 to 20 sec
Pst Cln Slv1	3	3	3
Pst Cln Slv2	0	0	0

- Eject Speed for 10µl Syringe: 30 -50µl/s (Utilities / Syringe)
- Pre Clean Solvent 2 is used for Samples with components of extremly different polarity.
- Pre Injection Delay is used for highly viscous samples. Length of time the needle will be heated up in hot injector.
- Needle Penetration Injector (Utilities / Injector). Value differs from injector manufacturer to manufacturer.

Method Cycle	Recommended PAL Parameters Split Injection	On-Column Injection PTV Inject Cold	Packed Columns Flush Vaporising
Sandwich			
CYCLE	GC -InjS	GC -InjS	GC -InjS
SYRINGE	10µl	10µl	10µl
Sample Volume	0.2 to 1µl	0.2 to 1µl	0.2 to 2µl
Solvent Plug	0.5 to1µl	0.5 to1µl	0.5 to1µl
Slv Source	Wash	Wash	Wash
IntStandard	0 to 1µl	0 to 1µl	0 to 1µl
Std Source	Standard	Standard	Standard
Air Gap(s)	0.5 to 1.0µl	0.5 to 1.0µl	0.5 to 1.0µl
AirVolumeNdl	0.8 to 1.0µl	0.8 to 1.0µl	0.8 to 1.0µl
Pre Cln Slv1	3	3	3
Pre Cln Slv2	0	0	0
Pre Cln Spl	2	2	2
Fill Speed	2µl/s	2µl/s	2µl/sec
Pullup Del	3 to 5 sec	3 to 5 sec	3 to 5 sec
Inject to	GC Inj 1	GC Inj 1	GC Inj 1
Inject Speed	30 - 50µl/s	1 - 5µl/s	5 - 20µl/s
Pre Inj Del	0 ms	0 ms	0 ms
Pst Inj Del	0 ms	3 to 5 sec	5 to 20 sec
Pst Cln Slv1	3	3	3
Pst Cln Slv2	0	0	0

- Sandwich Cycle: Mainly used to inject sample Volumes < 1.0µl with a 10µl Standard Syringe.

  Solvent Plug: Select Source vial e.g. Position "Wash" from Wash Station
  Intstd: Select Source Vial for Internal Standard or Reagent Solution e.g. Position "Standard" from Wash Station, Internal Standard will be added in the Syringe (not from one sample solution)
  Reagent: Example Esterification of organic acids spontenously in hot injector

Method Cycle	
Headspace	

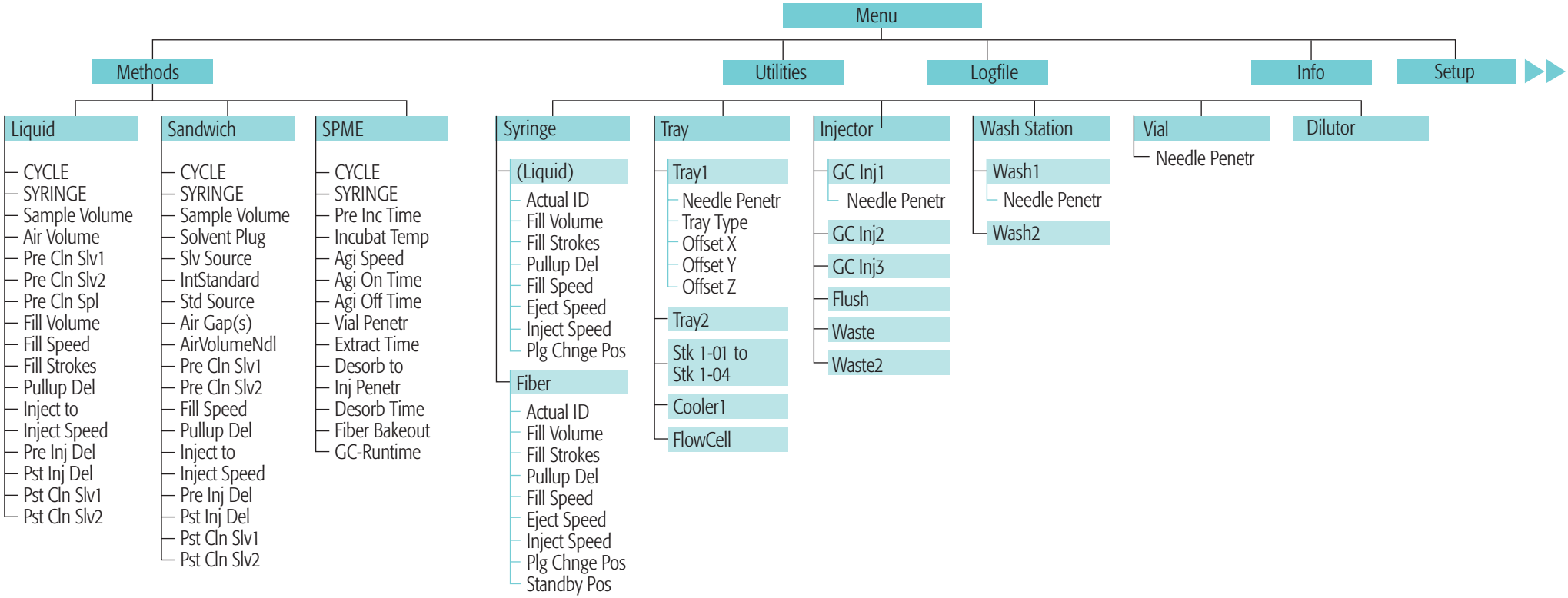
GC PAL can not be upgraded for the Headspace Technique.

Method Cycle	Recommended PAL Method Parameters	Remarks
SPME		
CYCLE	SPME	
SYRINGE	Fiber	
Pre Inc Time	0 or several minutes	Pre Incubation Time to equilibrate Sample before Fiber is inserted
Incubat Temp	35 to 200°C	Application and Fiber dependent
Agi Speed	250 to 750 rpm	Speed for Pre-Incubation Process only
Agi On Time	5 sec	On time for Pre-Incubation Process and Extract Time
Agi Off Time	2 sec	Off time for Pre-Incubation Process and Extract Time
Vial Penetr	22 to 31mm	Adjust Sample Volume in Vial accordingly
Extract Time	open	Application dependend Method development (Ab-Adsorbtion)
Desorb to	GC Inj 1	
Inj Penetr	35 to 45mm	Depends on type of injector
Desorb Time	2 to 5 min	Thermal Desorbtion within msec, longer time for fiber cleaning
Fiber Bakeout	0	If time is > 0: Fiber Conditioning Station will be used for cleaning
GC-Runtime	open	GC Cycle Time From "ready-to-ready" statous

Part No.: PAL FirmOverGC

GC PAL Firmware Overview

...CTC ANALYTICS



Other selectable Cycle:

GC-Dual

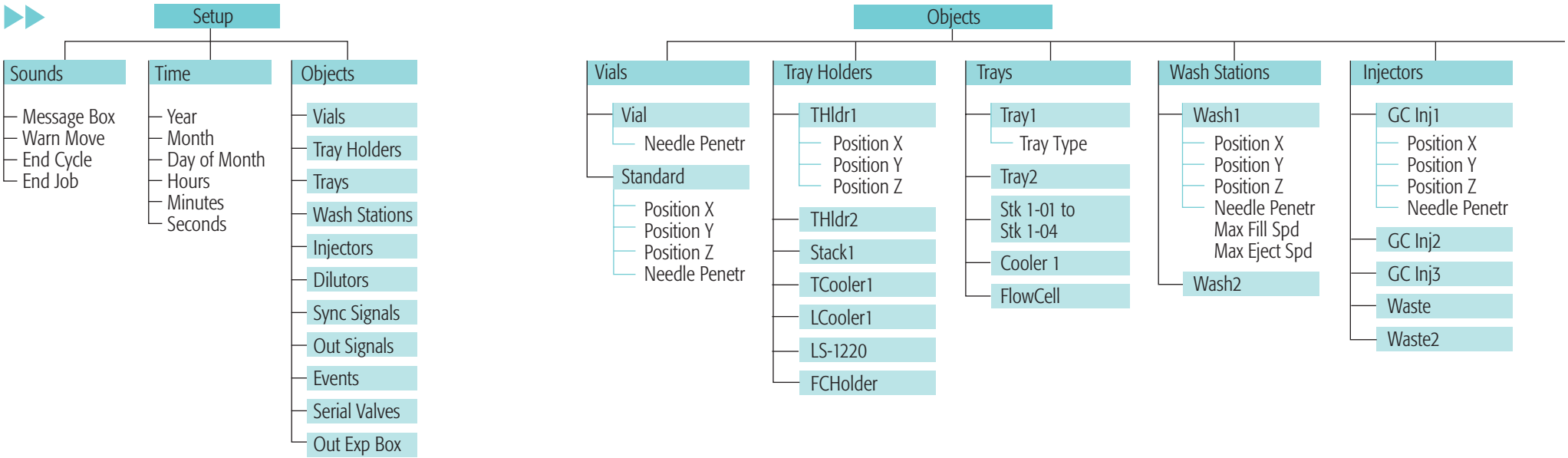
2 different injections with 1 GC-Cycle

Notes:
Plunger Stroke and Injection Counter
Menu/Info/Maintenance

The standard software does not include all Objects as shown in the Overview.
The layout depends on the hardware configuration for each individual PAL-System

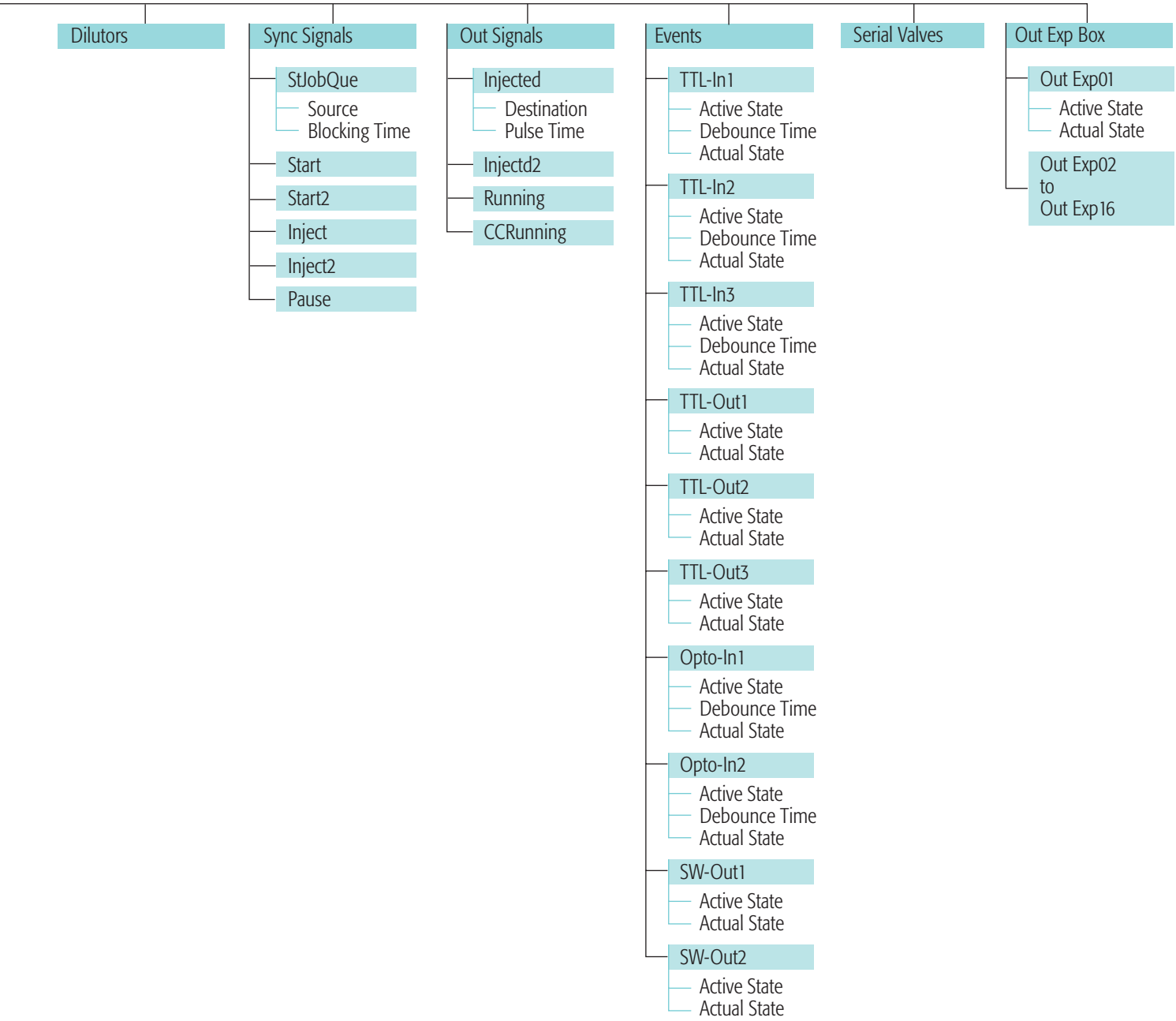
Revision D / Firmware 2.5.2 / October 2006

GC PAL Objects



Note:
The standard software does not include all Objects as shown in the Overview. The layout depends on the hardware configuration for each individual PAL-System

Revision D / Firmware 2.5.2 / October 2006


Dilutors
Sync Signals
StJobQue
Source
Blocking Time
Start
Start2
Inject
Inject2
Pause
Out Signals
Injected
Destination
Pulse Time
Injectd2
Running
CCRunning
Events
TTL-In1
Active State
Debounce Time
Actual State
TTL-In2
Active State
Debounce Time
Actual State
TTL-In3
Active State
Debounce Time
Actual State
TTL-Out1
Active State
Actual State
TTL-Out2
Active State
Actual State
TTL-Out3
Active State
Actual State
Opto-In1
Active State
Debounce Time
Actual State
Opto-In2
Active State
Debounce Time
Actual State
SW-Out1
Active State
Actual State
SW-Out2
Active State
Actual State
Serial Valves
Out Exp Box
Out Exp01
Active State
Actual State
Out Exp02
to
Out Exp16

Method Cycle	Recommended PAL Method Parameters
LC-Inj	
CYCLE	LC - Inj
SYRINGE	100µl
Sample Volume	80µl
Air Volume	0 nl
Pre Cln Slv1	1
Pre Cln Slv2	0
Pre Cln Spl	2
Fill Speed	5µl/s
Fill Strokes	3
Pullup Del	3-10 sec
Inject to	LC Vlv 1
Inject Speed	5µl/s
Pre Inj Del	500 ms
Pst Inj Del	500 ms
Pst Cln Slv1	2
Pst Cln Slv2	0
Vlv Cln Slv1	2
Vlv Cln Slv2	0

Method Cycle	Recommended PAL Method Parameters	Remarks
LC-Cut		
CYCLE	LC - Cut	
SYRINGE	100µl	
Sample Volume	80µl	
Air Volume	0 nl	
Pre Cln Slv1	1	
Pre Cln Slv2	0	
Pre Cln Spl	2	
Fill Speed	10µl/s	
Fill Strokes	3	
Pullup Del	3-10 sec	
Inject to	LC Vlv 1	
Inject Speed	10µl/s	
Pre Inj Del	500 ms	
Pst Inj Del	500 ms	
SplTransfDel	Sample Transfer Delay	Time needed to transfer Sample from Loop onto 2nd valve (pre - or analytical column)
Pst Cln Slv1	2	
Pst Cln Slv2	0	
Vlv Cln Slv1	2	
Vlv Cln Slv2	0	
Cut Valve	LC Vlv 2	Specify name of 2nd valve, switching valve
Cut Delay		Time needed for clean-up. Switch to backflush sample to analytical column or detector
MinCondTime		Minimum Conditioning Time: Time needed to condition pre - column on 2nd valve

LC-Cut Cycle controls 2 valves.

LC Valve 1: Injection valve with loop.
LC Valve 2: Switching valve.
- Example 1: Pre - Column for sample clean-up, backflushing to Analytical Column. Cut Delay > 0.
- Example 2: 10 - port valve with 2 Analytical Columns. Loading column 1, condition column 2. Valve Toggle after Cycle time. Loading column 2, condition column 1. Cut Delay = 0

Example for the following conditions:

- Loop Size 20µl, overfill 3 - 5 times
  Partial Loop filling: Allowed sample volume range 20 - 60% of loop content for loops ≤ 100µl
  Larger Loops: 20 - 80% of loop content

- Syringe:
  Syr X G100 - 22S - 3: Gauge 22S limits fill speed to max 20µl/s (5-20 µl/s depending on viscosity of solvent)
  Syr X G100 - 22 - 3: Gauge 22 allows fill speed up to 200µl/s (depends on viscosity of solvent)

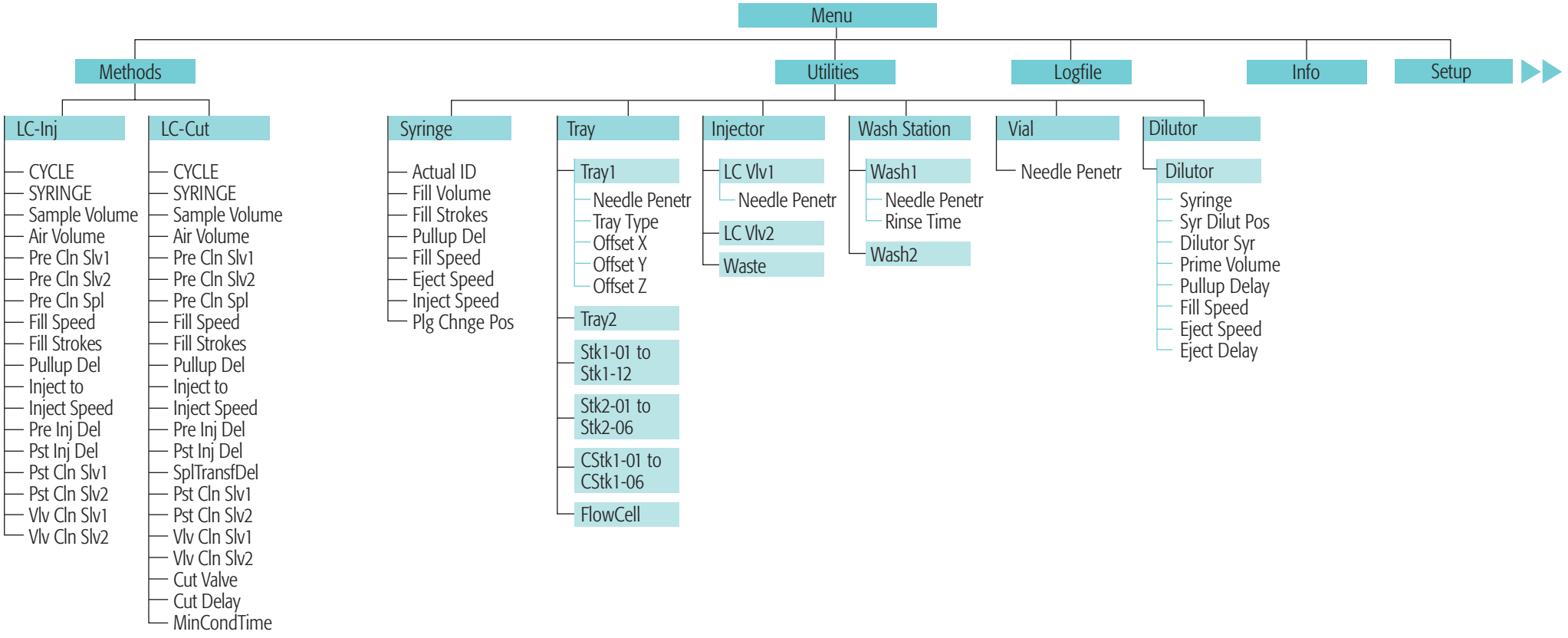
- Eject Speed for 100µl Syringe:
  50 to 150µl/s (Utilities/Syringe)

- Pre - and Post Washing:
  Use Solvent 1 and 2 for Samples with components of extremly different polarity.
  Samples containing Proteins should not get in contact with organic solvents.

- Wash Steps for Biological Samples:
  1st Wash Cycle: Aqueous Solvent
  2nd Wash Cycle: Organic Solvent

  1st Wash Cycle before next sample:
  Pre-Wash with Aqueous Solvent (eliminate Organic Solvents in Syringe and Valve)

HTS PAL Firmware Overview

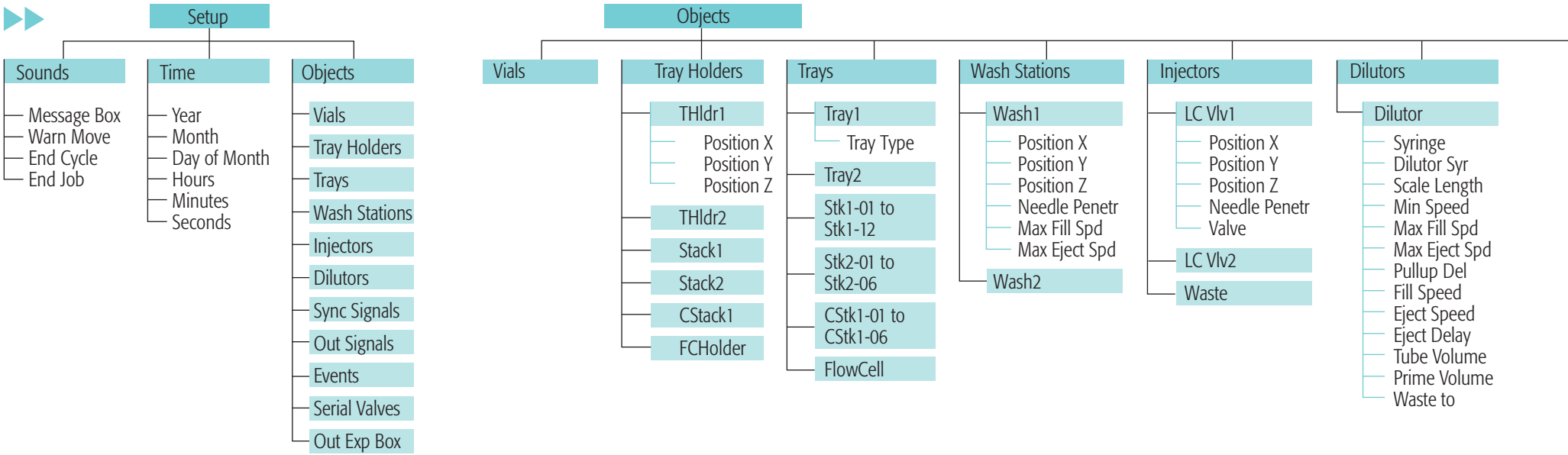


Notes:
Plunger Stroke and Valve Switch Counter
Menu/Info/Maintenance

he standard software does not include all Objects as shown in the Overview. The layout depends on the hardware configuration for each individual PAL-System

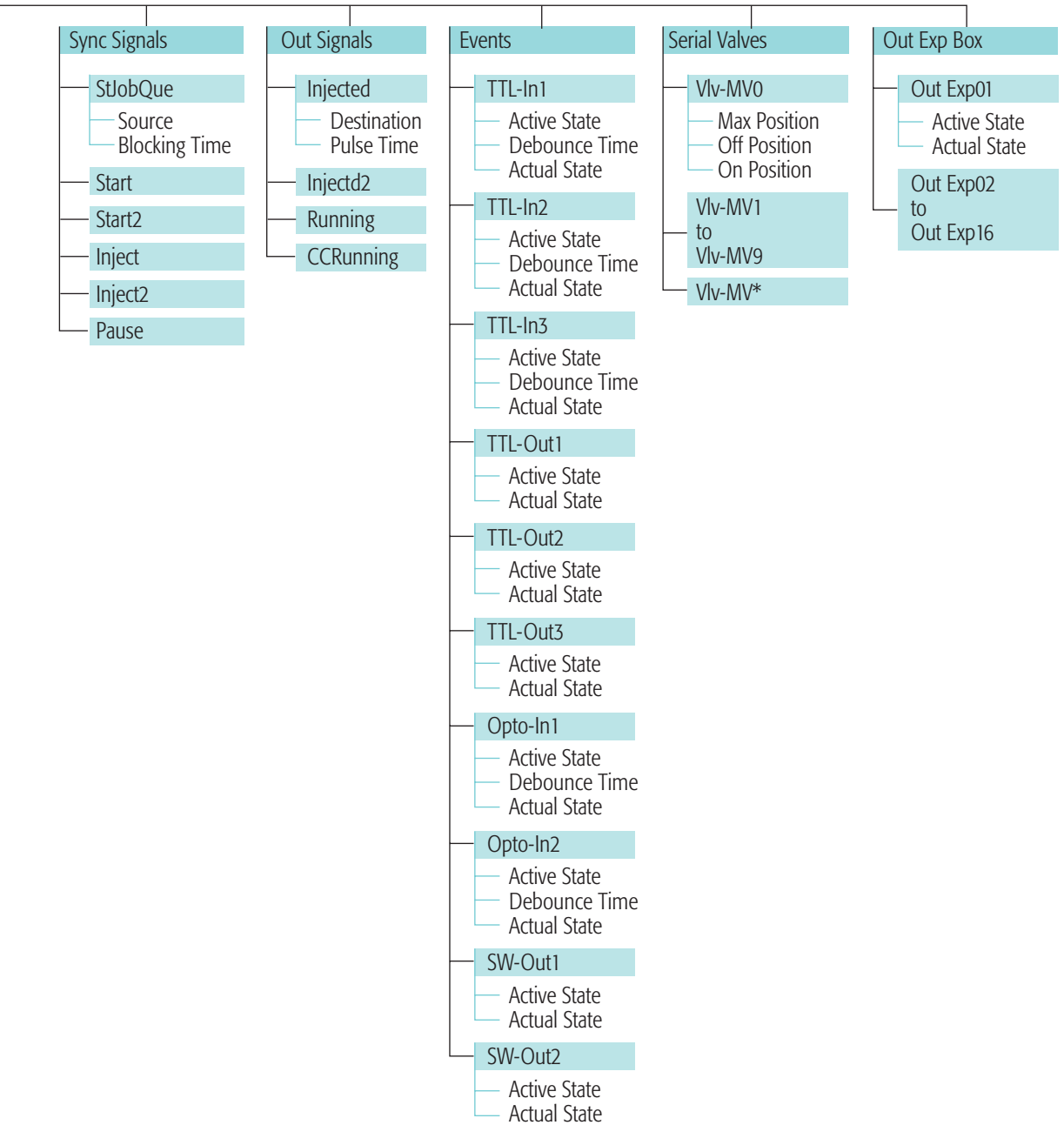
Revision F / Firmware 2.5.2 / October 2006

HTS PAL Objects



Note:
The standard software does not include all Objects as shown in the Overview. The layout depends on the hardware configuration for each individual PAL-System

Revision F / Firmware 2.5.2 / October 2006


Sync Signals
StJobQue
Source
Blocking Time
Start
Start2
Inject
Inject2
Pause
Out Signals
Injected
Destination
Pulse Time
Injectd2
Running
CCRunning
Events
TTL-In1
Active State
Debounce Time
Actual State
TTL-In2
Active State
Debounce Time
Actual State
TTL-In3
Active State
Debounce Time
Actual State
TTL-Out1
Active State
Actual State
TTL-Out2
Active State
Actual State
TTL-Out3
Active State
Actual State
Opto-In1
Active State
Debounce Time
Actual State
Opto-In2
Active State
Debounce Time
Actual State
SW-Out1
Active State
Actual State
SW-Out2
Active State
Actual State
Serial Valves
Vlv-MV0
Max Position
Off Position
On Position
Vlv-MV1
to
Vlv-MV9
Vlv-MV*
Out Exp Box
Out Exp01
Active State
Actual State
Out Exp02
to
Out Exp16

Method Cycle	Recommended PAL Method Parameters
LC-Inj	
CYCLE	LC - Inj
SYRINGE	100µl
Sample Volume	80µl
Air Volume	0 nl
Pre Cln Slv1	1
Pre Cln Slv2	0
Pre Cln Spl	2
Fill Speed	10µl/s
Fill Strokes	3
Pullup Del	3-10 sec
Inject to	LC Vlv 1
Inject Speed	10µl/s
Pre Inj Del	500 ms
Pst Inj Del	500 ms
Pst Cln Slv1	2
Pst Cln Slv2	0
Vlv Cln Slv1	2
Vlv Cln Slv2	0

Example for the following conditions:

– Loop Size 20µl, overfill 3 - 5 times
  Partial Loop filling: Allowed sample volume range 20 - 60% of loop content for loops ≤ 100µl
  Larger Loops: 20 - 80% of loop content

– Syringe:
  Syr X G100 - 22S - 3: Gauge 22S limits fill speed to max 20µl/s (5-20 µl/s depending on viscosity of solvent)
  Syr X G100 - 22 - 3: Gauge 22 allows fill speed up to 200µl/s (depends on viscosity of solvent)

– Eject Speed for 100µl Syringe:
  50 to 150µl/s (Utilities/Syringe)

– Pre - and Post Washing:
  Use Solvent 1 and 2 for Samples with components of extremly different polarity.
  Samples containing Proteins should not get in contact with organic solvents.

- Wash Steps for Biological Samples:
  1st Wash Cycle: Aqueous Solvent
  2nd Wash Cycle: Organic Solvent

  1st Wash Cycle before next sample:
  Pre-Wash with Aqueous Solvent (eliminate Organic Solvents in Syringe and Valve)

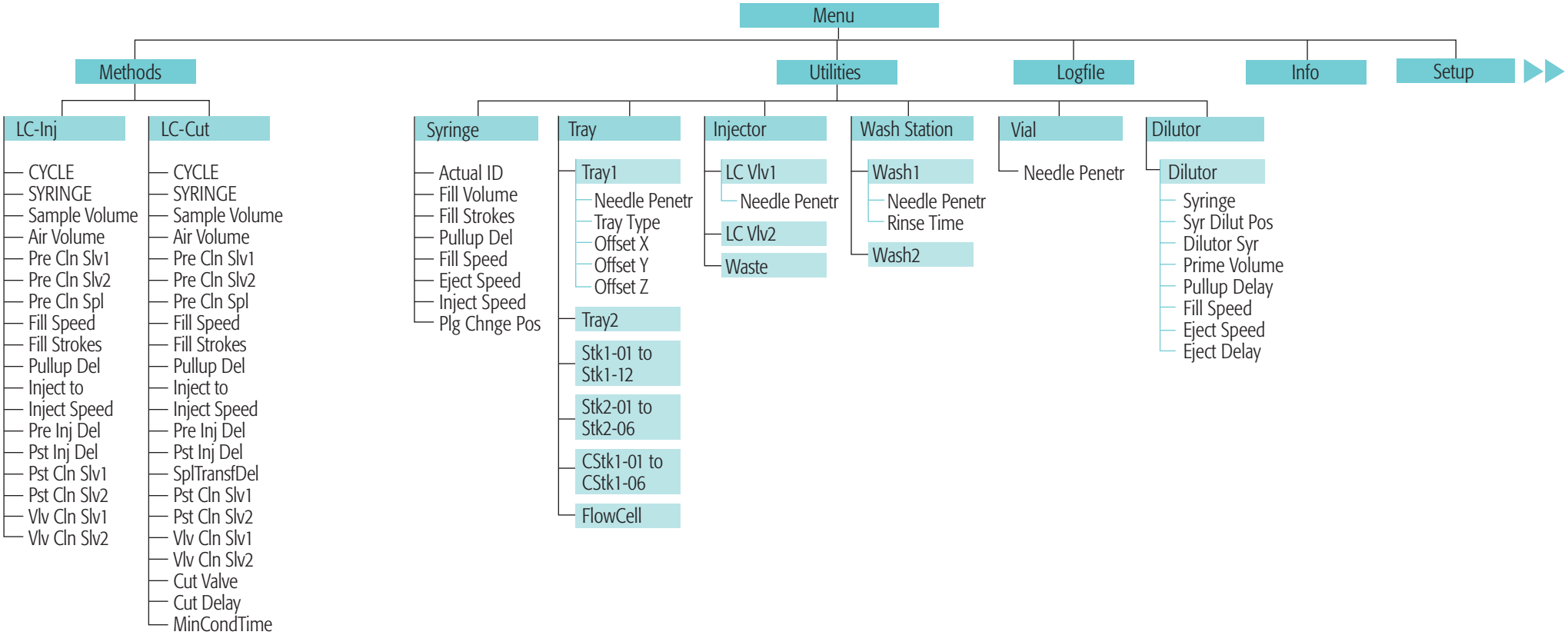
Method Cycle	Recommended PAL Method Parameters	Remarks
LC-Cut		
CYCLE	LC - Cut	
SYRINGE	100µl	
Sample Volume	80µl	
Air Volume	0 nl	
Pre Cln Slv1	1	
Pre Cln Slv2	0	
Pre Cln Spl	2	
Fill Speed	5µl/s	
Fill Strokes	3	
Pullup Del	3-10 sec	
Inject to	LC Vlv 1	
Inject Speed	5µl/s	
Pre Inj Del	500 ms	
Pst Inj Del	500 ms	
SplTransfDel	Sample Transfer Delay	Time needed to transfer Sample from Loop onto 2nd valve (pre - or analytical column)
Pst Cln Slv1	2	
Pst Cln Slv2	0	
Vlv Cln Slv1	2	
Vlv Cln Slv2	0	
Cut Valve	LC Vlv 2	Specify name of 2nd valve, switching valve
Cut Delay		Time needed for clean-up. Switch to backflush sample to analytical column or detector
MinCondTime		Minimum Conditioning Time: Time needed to condition pre - column on 2nd valve

LC-Cut Cycle controls 2 valves.

LC Valve 1: Injection valve with loop.
LC Valve 2: Switching valve.
– Example 1: Pre - Column for sample clean-up, backflushing to Analytical Column. Cut Delay > 0.
– Example 2: 10 - port valve with 2 Analytical Columns. Loading column 1, condition column 2.
  Valve Toggle after Cycle time. Loading column 2, condition column 1. Cut Delay = 0

HTC PAL Firmware Overview

...CTC ANALYTICS

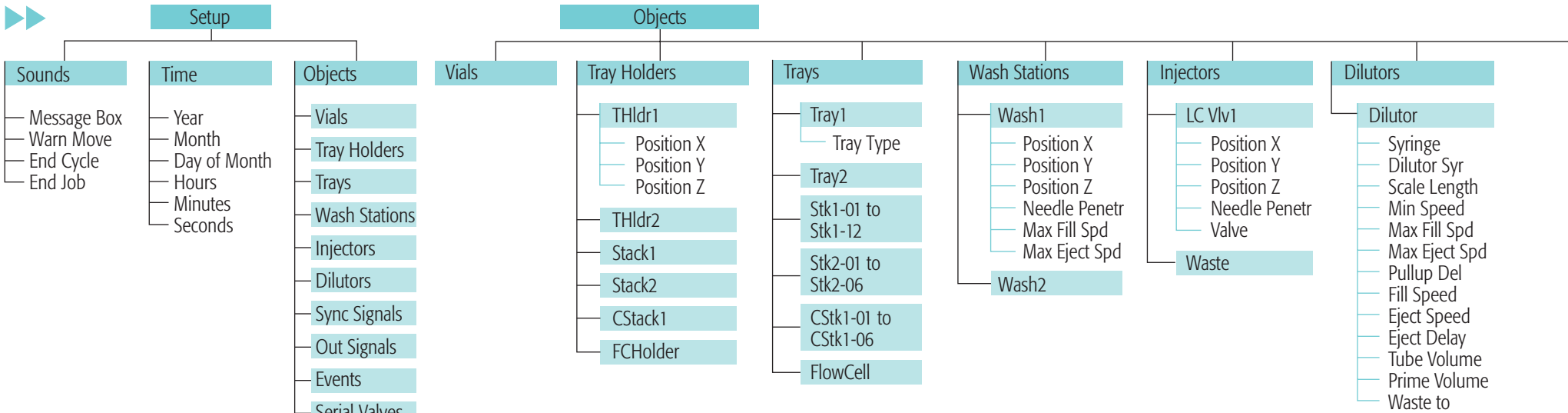


Notes:
Plunger Stroke and Valve Switch Counter
Menu/Info/Maintenance

he standard software does not include all Objects as shown in the Overview. The layout depends on the hardware configuration for each individual PAL-System

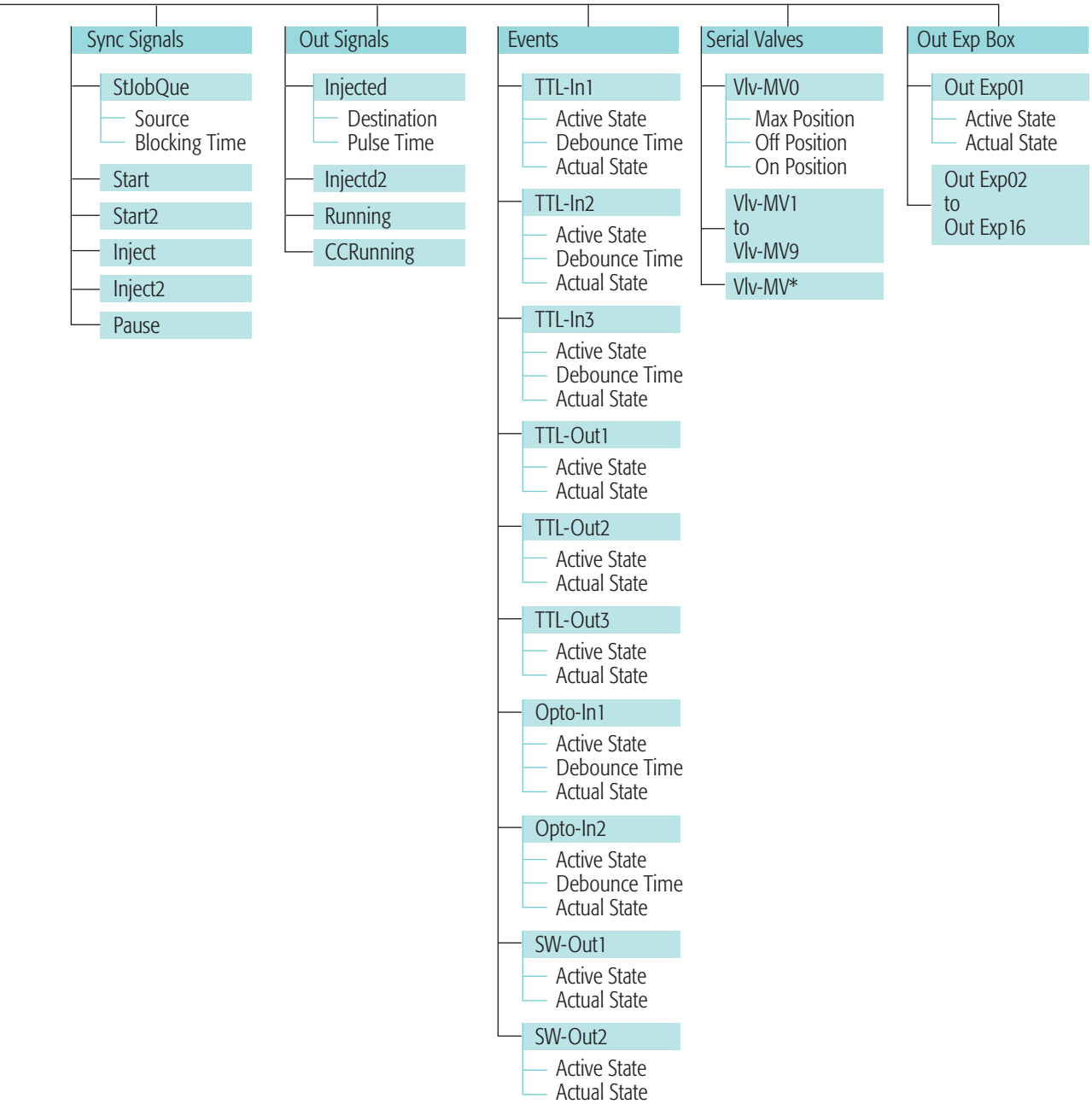
Revision F / Firmware 2.5.2 / October 2006

HTC PAL Objects



Note:
The standard software does not include all Objects as shown in the Overview. The layout depends on the hardware configuration for each individual PAL-System

Revision F / Firmware 2.5.2 / October 2006


Sync Signals
StJobQue
Source
Blocking Time
Start
Start2
Inject
Inject2
Pause
Out Signals
Injected
Destination
Pulse Time
Injectd2
Running
CCRunning
Events
TTL-In1
Active State
Debounce Time
Actual State
TTL-In2
Active State
Debounce Time
Actual State
TTL-In3
Active State
Debounce Time
Actual State
TTL-Out1
Active State
Actual State
TTL-Out2
Active State
Actual State
TTL-Out3
Active State
Actual State
Opto-In1
Active State
Debounce Time
Actual State
Opto-In2
Active State
Debounce Time
Actual State
SW-Out1
Active State
Actual State
SW-Out2
Active State
Actual State
Serial Valves
Vlv-MV0
Max Position
Off Position
On Position
Vlv-MV1
to
Vlv-MV9
Vlv-MV*
Out Exp Box
Out Exp01
Active State
Actual State
Out Exp02
to
Out Exp16

Method Cycle	Recommended PAL Method Parameters
LC-Inj	
CYCLE	LC - Inj
SYRINGE	100µl
Sample Volume	80µl
Air Volume	0 nl
Pre Cln Slv1	1
Pre Cln Slv2	0
Pre Cln Spl	2
Fill Speed	5µl
Fill Strokes	3
Pullup Del	3-10 sec
Inject to	LC Vlv 1
Inject Speed	5µl/s
Pre Inj Del	500 ms
Pst Inj Del	500 ms
Pst Cln Slv1	2
Pst Cln Slv2	0
Vlv Cln Slv1	2
Vlv Cln Slv2	0

Example for the following conditions:

– Loop Size 20µl, overfill 3 - 5 times
Partial Loop filling: Allowed sample volume range 20 - 60% of loop content for loops ≤ 100µl
Larger Loops: 20 - 80% of loop content

– Syringe:
Syr X G100 - 22S - 3: Gauge 22S limits fill speed to max 20µl/s (5-20 µl/s depending on viscosity of solvent)
Syr X G100 - 22 - 3: Gauge 22 allows fill speed up to 200µl/s (depends on viscosity of solvent)

– Eject Speed for 100µl Syringe:
50 to 150µl/s (Utilities/Syringe)

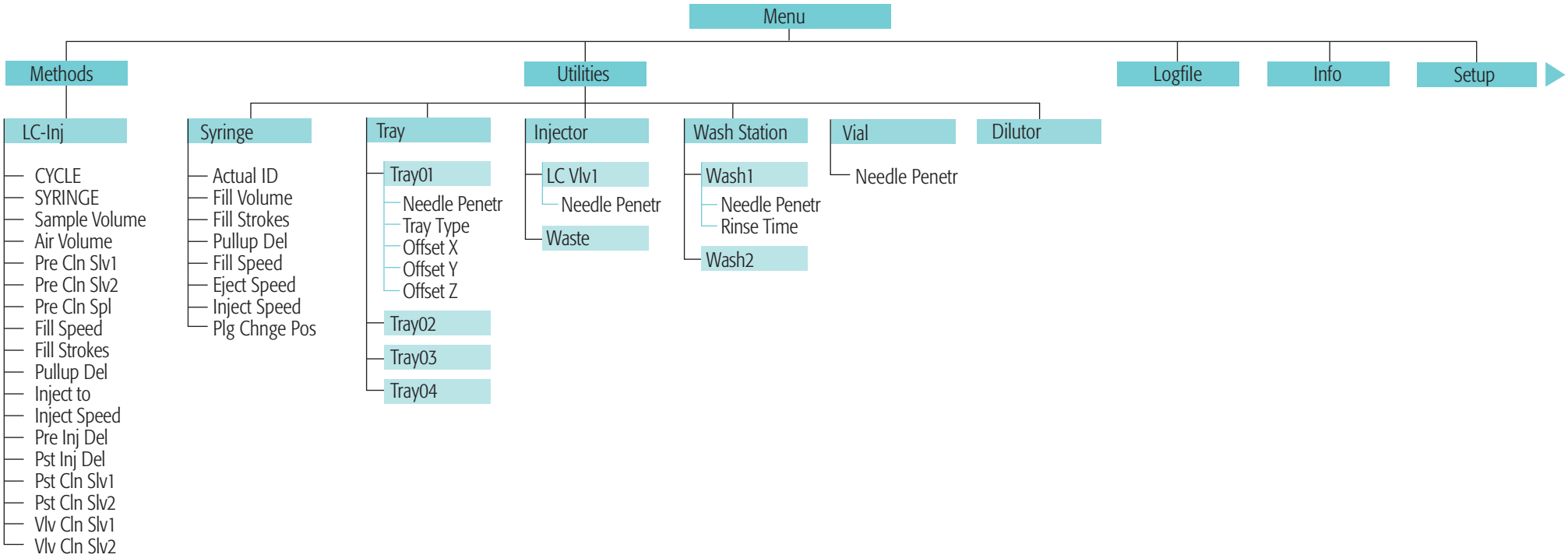
– Pre - and Post Washing:
Use Solvent 1 and 2 for Samples with components of extremly different polarity.
Samples containing Proteins should not get in contact with organic solvents.

- Wash Steps for Biological Samples:
1st Wash Cycle: Aqueous Solvent
2nd Wash Cycle: Organic Solvent

1st Wash Cycle before next sample:
Pre-Wash with Aqueous Solvent (eliminate Organic Solvents in Syringe and Valve)

Part No.: PAL FirmOverLC

LC PAL Firmware Overview

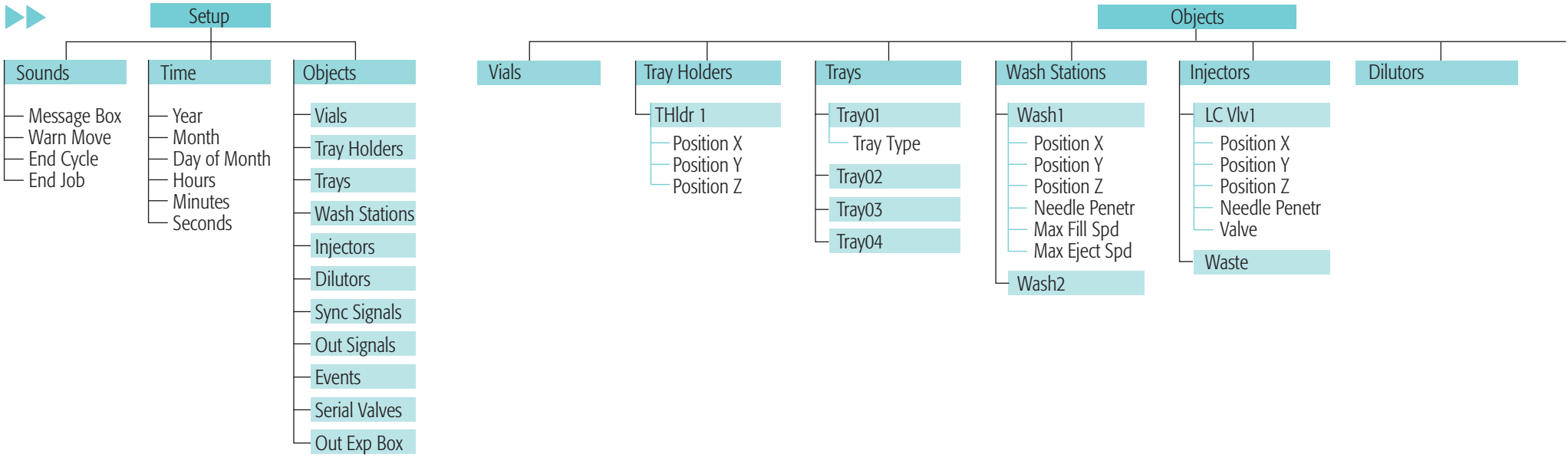


Notes:
Plunger Stroke and Valve Switch Counter
Menu/Info/Maintenance

The standard software does not include all Objects as shown in the Overview. The layout depends on the hardware configuration for each individual PAL-System

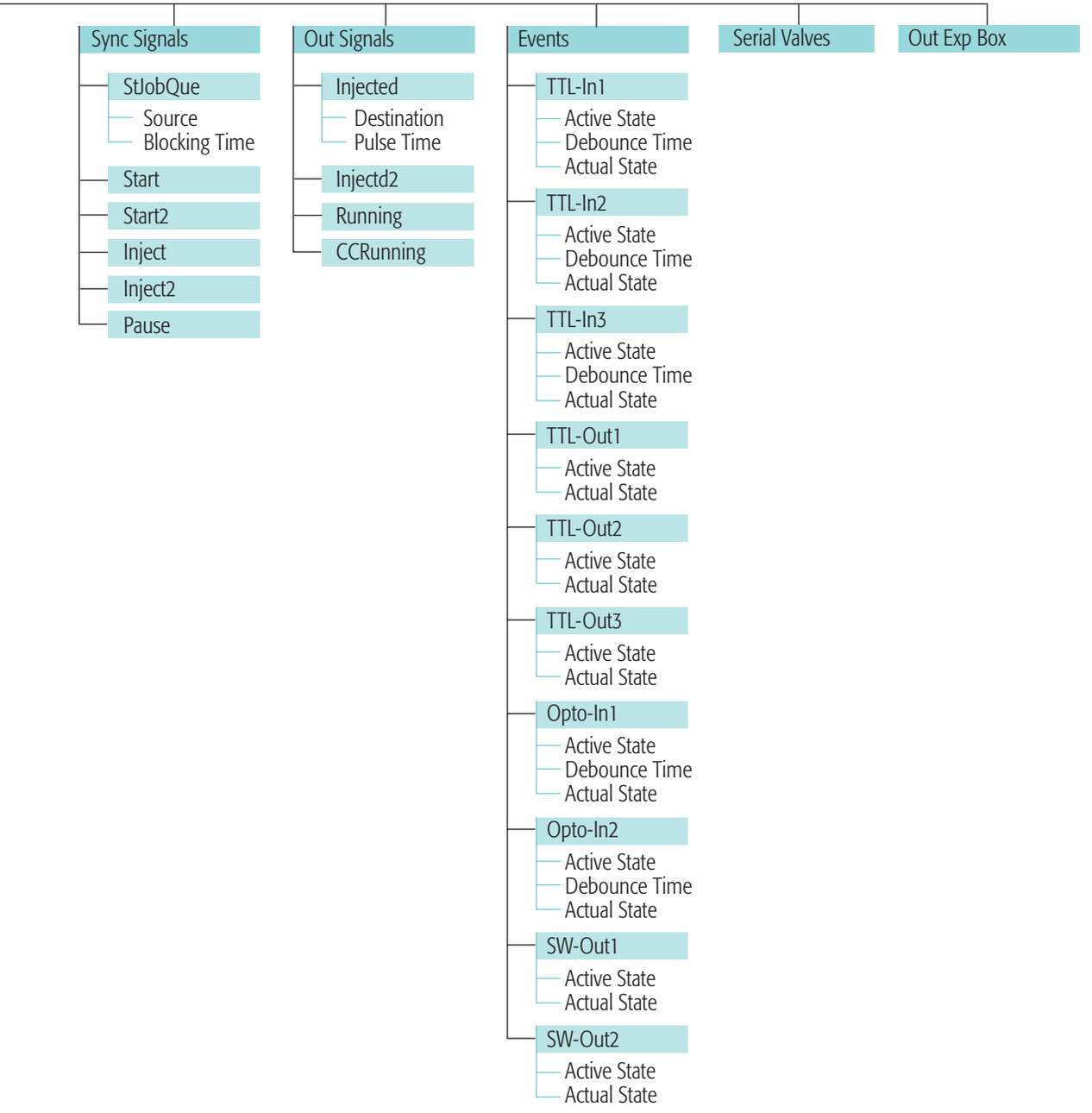
Revision F / Firmware 2.5.2 / October 2006

LC PAL Objects



Note:
The standard software does not include all Objects as shown in the Overview.
The layout depends on the hardware configuration for each individual PAL-System

Revision F / Firmware 2.5.2 / October 2006


Sync Signals
StJobQue
Source
Blocking Time
Start
Start2
Inject
Inject2
Pause
Out Signals
Injected
Destination
Pulse Time
Injectd2
Running
CCRunning
Events
TTL-In1
Active State
Debounce Time
Actual State
TTL-In2
Active State
Debounce Time
Actual State
TTL-In3
Active State
Debounce Time
Actual State
TTL-Out1
Active State
Actual State
TTL-Out2
Active State
Actual State
TTL-Out3
Active State
Actual State
Opto-In1
Active State
Debounce Time
Actual State
Opto-In2
Active State
Debounce Time
Actual State
SW-Out1
Active State
Actual State
SW-Out2
Active State
Actual State
Serial Valves
Out Exp Box