

# JRC Scientific and Technical Reports

## Annex

### Data Acquisition and Signal Generator examples

- Beatriz Zapico Blanco, F. Javier Molina



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	Acquisition Node		Master Controller	
	Internal Trigger	External Trigger	Internal Trigger	Int. Trigger + DLL
<b>Name</b>	AcqNodeInt	AcqNodeExt	MasterInt	MasterDLLInt
<b>Project</b>	Manual	Manual	Manual	Manual
<b>Structure</b>	Specimen	Specimen	Specimen	Specimen
<b>Experiment</b>	A	B	C	D
<b>Description</b>	Acq Node + Internal Trigger	Acq Node + External Trigger	Master + Internal Trigger	Master + DLL + Internal Trigger
<b>Sampling [ms]</b>	100	2	100	2
<b>Average [points]</b>	100	100	50	1
<b>Pts Number</b>	20 000	10 000	300 000	300 000
<b>Signals</b>	DEV_IN.CHANNEL_N	DEV_IN.CHANNEL_N	INTERNALALGOINPUT N INTERNALALGOOUTPUT N	ALGORAV
<b>Run Trigger Channel</b>	TRIGGER_N.RunTrigger	DEV_IN.CHANNEL_6 5	TRIGGER_N.RunTrigger	DEV_OUT.CHANNEL_1 7
<b>Run Trigger Type</b>	Rising Level	Rising Edge	Rising Level	Rising Edge

**Table 1 Summary**

## ***A. Acquisition through an acquisition node with an internal trigger***

#Start of Acquisition Setup File : C:\Manual\Acquisition\A.Acq

#Name of the acquisition Object  
Name=AcqNodeInt

#Message queue size  
dwQueueSize=8000

#Memory size  
dwMemorySize=200480

#Maximum block  
dwBlockNumber=50000

#Acquisition Type  
usAcquisitionType=1

#project name  
szProjectName=Manual

#structure name  
szStructureName=Specimen

#experiment name  
szExperimentName=A

#acquisition name  
szAcquisitionName=AcqNodeInt

#description  
szDescription=Acq Node + Internal Trig

#sampling time  
dwSamplingTime=100

#Average  
dwAverage=100

#buffer size (number of acq)  
dwBufferSize=20000

#signalnumber  
dwSignalNumber=64

szSignal1=DEV\_IN.CHANNEL\_1  
szSignal2=DEV\_IN.CHANNEL\_2  
szSignal3=DEV\_IN.CHANNEL\_3  
szSignal4=DEV\_IN.CHANNEL\_4  
szSignal5=DEV\_IN.CHANNEL\_5  
szSignal6=DEV\_IN.CHANNEL\_6  
szSignal7=DEV\_IN.CHANNEL\_7  
szSignal8=DEV\_IN.CHANNEL\_8  
szSignal9=DEV\_IN.CHANNEL\_9

```
szSignal10=DEV_IN.CHANNEL_10
szSignal11=DEV_IN.CHANNEL_11
szSignal12=DEV_IN.CHANNEL_12
szSignal13=DEV_IN.CHANNEL_13
szSignal14=DEV_IN.CHANNEL_14
szSignal15=DEV_IN.CHANNEL_15
szSignal16=DEV_IN.CHANNEL_16
szSignal17=DEV_IN.CHANNEL_17
szSignal18=DEV_IN.CHANNEL_18
szSignal19=DEV_IN.CHANNEL_19
szSignal20=DEV_IN.CHANNEL_20
szSignal21=DEV_IN.CHANNEL_21
szSignal22=DEV_IN.CHANNEL_22
szSignal23=DEV_IN.CHANNEL_23
szSignal24=DEV_IN.CHANNEL_24
szSignal25=DEV_IN.CHANNEL_25
szSignal26=DEV_IN.CHANNEL_26
szSignal27=DEV_IN.CHANNEL_27
szSignal28=DEV_IN.CHANNEL_28
szSignal29=DEV_IN.CHANNEL_29
szSignal30=DEV_IN.CHANNEL_30
szSignal31=DEV_IN.CHANNEL_31
szSignal32=DEV_IN.CHANNEL_32
szSignal33=DEV_IN.CHANNEL_33
szSignal34=DEV_IN.CHANNEL_34
szSignal35=DEV_IN.CHANNEL_35
szSignal36=DEV_IN.CHANNEL_36
szSignal37=DEV_IN.CHANNEL_37
szSignal38=DEV_IN.CHANNEL_38
szSignal39=DEV_IN.CHANNEL_39
szSignal40=DEV_IN.CHANNEL_40
szSignal41=DEV_IN.CHANNEL_41
szSignal42=DEV_IN.CHANNEL_42
szSignal43=DEV_IN.CHANNEL_43
szSignal44=DEV_IN.CHANNEL_44
szSignal45=DEV_IN.CHANNEL_45
szSignal46=DEV_IN.CHANNEL_46
szSignal47=DEV_IN.CHANNEL_47
szSignal48=DEV_IN.CHANNEL_48
szSignal49=DEV_IN.CHANNEL_49
szSignal50=DEV_IN.CHANNEL_50
szSignal51=DEV_IN.CHANNEL_51
szSignal52=DEV_IN.CHANNEL_52
szSignal53=DEV_IN.CHANNEL_53
szSignal54=DEV_IN.CHANNEL_54
szSignal55=DEV_IN.CHANNEL_55
szSignal56=DEV_IN.CHANNEL_56
szSignal57=DEV_IN.CHANNEL_57
szSignal58=DEV_IN.CHANNEL_58
szSignal59=DEV_IN.CHANNEL_59
szSignal60=DEV_IN.CHANNEL_60
szSignal61=DEV_IN.CHANNEL_61
szSignal62=DEV_IN.CHANNEL_62
szSignal63=DEV_IN.CHANNEL_63
szSignal64=DEV_IN.CHANNEL_64
```

```
#StartTrigger
```

```
szStartTrigger=TRIGGER-1.StartTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StartTriggerType
usStartTriggerType=1

#StartTriggerValue
dStartTriggerValue=1

#AcqTrigger
szAcqTrigger=TRIGGER-1.RunTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#AcqTriggerType
usAcqTriggerType=2

#AcqTriggerValue
dAcqTriggerValue=1

#StopTrigger
szStopTrigger=TRIGGER-1.StopTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usStopTriggerType=1

#StopTriggerValue
dStopTriggerValue=1

#FinishTrigger
szFinishTrigger=TRIGGER-1.FinishTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usFinishTriggerType=1

#FinishTriggerValue
dFinishTriggerValue=1

#End of Acquisition Setup File : C:\Manual\Acquisition\A.Acq
```

## ***B. Acquisition through an acquisition node with an external trigger (synchronous acquisition with a master DLL)***

```
#Start of Acquisition Setup File : C:\Manual\Acquisition\B.Acq
#Name of the acquisition Object
Name=AcqNodeExt

#Message queue size
dwQueueSize=8000

#Memory size
dwMemorySize=200480

#Maximum block
dwBlockNumber=50000

#Acquisition Type
usAcquisitionType=1

#project name
szProjectName=Manual

#structure name
szStructureName=Specimen

#experiment name
szExperimentName=B

#acquisition name
szAcquisitionName=AcqNodeExt

#description
szDescription=Acq Node + External Trig

#sampling time
dwSamplingTime=2

#Average
dwAverage=100

#buffer size (number of acq)
dwBufferSize=10000

#signalnumber
dwSignalNumber=6

szSignal1=DEV_IN.CHANNEL_1
szSignal2=DEV_IN.CHANNEL_2
szSignal3=DEV_IN.CHANNEL_3
szSignal4=DEV_IN.CHANNEL_4
szSignal5=DEV_IN.CHANNEL_5
szSignal6=DEV_IN.CHANNEL_6
szSignal7=DEV_IN.CHANNEL_7
szSignal8=DEV_IN.CHANNEL_8
```

szSignal9=DEV\_IN.CHANNEL\_9  
szSignal10=DEV\_IN.CHANNEL\_10  
szSignal11=DEV\_IN.CHANNEL\_11  
szSignal12=DEV\_IN.CHANNEL\_12  
szSignal13=DEV\_IN.CHANNEL\_13  
szSignal14=DEV\_IN.CHANNEL\_14  
szSignal15=DEV\_IN.CHANNEL\_15  
szSignal16=DEV\_IN.CHANNEL\_16  
szSignal17=DEV\_IN.CHANNEL\_17  
szSignal18=DEV\_IN.CHANNEL\_18  
szSignal19=DEV\_IN.CHANNEL\_19  
szSignal20=DEV\_IN.CHANNEL\_20  
szSignal21=DEV\_IN.CHANNEL\_21  
szSignal22=DEV\_IN.CHANNEL\_22  
szSignal23=DEV\_IN.CHANNEL\_23  
szSignal24=DEV\_IN.CHANNEL\_24  
szSignal25=DEV\_IN.CHANNEL\_25  
szSignal26=DEV\_IN.CHANNEL\_26  
szSignal27=DEV\_IN.CHANNEL\_27  
szSignal28=DEV\_IN.CHANNEL\_28  
szSignal29=DEV\_IN.CHANNEL\_29  
szSignal30=DEV\_IN.CHANNEL\_30  
szSignal31=DEV\_IN.CHANNEL\_31  
szSignal32=DEV\_IN.CHANNEL\_32  
szSignal33=DEV\_IN.CHANNEL\_33  
szSignal34=DEV\_IN.CHANNEL\_34  
szSignal35=DEV\_IN.CHANNEL\_35  
szSignal36=DEV\_IN.CHANNEL\_36  
szSignal37=DEV\_IN.CHANNEL\_37  
szSignal38=DEV\_IN.CHANNEL\_38  
szSignal39=DEV\_IN.CHANNEL\_39  
szSignal40=DEV\_IN.CHANNEL\_40  
szSignal41=DEV\_IN.CHANNEL\_41  
szSignal42=DEV\_IN.CHANNEL\_42  
szSignal43=DEV\_IN.CHANNEL\_43  
szSignal44=DEV\_IN.CHANNEL\_44  
szSignal45=DEV\_IN.CHANNEL\_45  
szSignal46=DEV\_IN.CHANNEL\_46  
szSignal47=DEV\_IN.CHANNEL\_47  
szSignal48=DEV\_IN.CHANNEL\_48  
szSignal49=DEV\_IN.CHANNEL\_49  
szSignal50=DEV\_IN.CHANNEL\_50  
szSignal51=DEV\_IN.CHANNEL\_51  
szSignal52=DEV\_IN.CHANNEL\_52  
szSignal53=DEV\_IN.CHANNEL\_53  
szSignal54=DEV\_IN.CHANNEL\_54  
szSignal55=DEV\_IN.CHANNEL\_55  
szSignal56=DEV\_IN.CHANNEL\_56  
szSignal57=DEV\_IN.CHANNEL\_57  
szSignal58=DEV\_IN.CHANNEL\_58  
szSignal59=DEV\_IN.CHANNEL\_59  
szSignal60=DEV\_IN.CHANNEL\_60  
szSignal61=DEV\_IN.CHANNEL\_61  
szSignal62=DEV\_IN.CHANNEL\_62  
szSignal63=DEV\_IN.CHANNEL\_63  
szSignal64=DEV\_IN.CHANNEL\_64



```

#StartTrigger
szStartTrigger=TRIGGER-1.StartTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StartTriggerType
usStartTriggerType=1

#StartTriggerValue
dStartTriggerValue=1

#AcqTrigger
szAcqTrigger=DEV_IN.CHANNEL_65

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#AcqTriggerType
usAcqTriggerType=1

#AcqTriggerValue
dAcqTriggerValue=1

#StopTrigger
szStopTrigger=TRIGGER-1.StopTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usStopTriggerType=1

#StopTriggerValue
dStopTriggerValue=1

#FinishTrigger
szFinishTrigger=TRIGGER-1.FinishTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usFinishTriggerType=1

#FinishTriggerValue
dFinishTriggerValue=1

#End of Acquisition Setup File : C:\Manual\Acquisition\B.Acq

```

## ***C. Acquisition through a Master Controller with an internal predefined trigger***

```
#Start of Acquisition Setup File : C:\Manual\Acquisition\C.Acq
#Name of the acquisition Object
Name=MasterInt

#Message queue size
dwQueueSize=8000

#Memory size
dwMemorySize=200480

#Maximum block
dwBlockNumber=50000

#Acquisition Type
usAcquisitionType=1

#project name
szProjectName=Manual

#structure name
szStructureName=Specimen

#experiment name
szExperimentName=C

#acquisition name
szAcquisitionName=MasterInt

#description
szDescription=Master + Internal Trigger

#sampling time
dwSamplingTime=100

#Average
dwAverage=50

#buffer size (number of acq)
dwBufferSize=300000

#signalnumber
dwSignalNumber=10
szSignal1=INTERNALALGOINPUT1.Tempo2
szSignal2=INTERNALALGOINPUT1.TempoAbs
szSignal3=INTERNALALGOINPUT1.Heide
szSignal4=INTERNALALGOINPUT1.Forcel
szSignal5=INTERNALALGOOUTPUT1.Reference
szSignal6=INTERNALALGOINPUT2.Tempo2
szSignal7=INTERNALALGOINPUT2.TempoAbs
szSignal8=INTERNALALGOINPUT2.Heide
szSignal9=INTERNALALGOINPUT2.Forcel
```

```

szSignal10=INTERNALALGOOUTPUT2.Reference

#StartTrigger
szStartTrigger=TRIGGER-1.StartTrigger
# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StartTriggerType
usStartTriggerType=1

#StartTriggerValue
dStartTriggerValue=1

#AcqTrigger
szAcqTrigger=TRIGGER-1.RunTrigger
# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#AcqTriggerType
usAcqTriggerType=2

#AcqTriggerValue
dAcqTriggerValue=1

#StopTrigger
szStopTrigger=TRIGGER-1.StopTrigger
# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usStopTriggerType=1

#StopTriggerValue
dStopTriggerValue=1

#FinishTrigger
szFinishTrigger=TRIGGER-1.FinishTrigger
# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usFinishTriggerType=1

#FinishTriggerValue
dFinishTriggerValue=1
#End of Acquisition Setup File : C:\Manual\Acquisition\C.Acq

```

## ***D. Acquisition through a Master Controller with an internal trigger synchronous with the DLL***

#Start of Acquisition Setup File : C:\Manual\Acquisition\D.Acq

#Name of the acquisition Object  
Name=MasterDLLInt

#Message queue size  
dwQueueSize=8000

#Memory size  
dwMemorySize=200480

#Maximum block  
dwBlockNumber=50000

#Acquisition Type  
usAcquisitionType=1

#project name  
szProjectName=Manual

#structure name  
szStructureName=Specimen

#experiment name  
szExperimentName=D

#acquisition name  
szAcquisitionName=MasterDLLInt

#description  
szDescription=Master+DLL+Internal Trig

#sampling time  
dwSamplingTime=2

#Average  
dwAverage=1

#buffer size (number of acq)  
dwBufferSize=300000

#signalnumber  
dwSignalNumber=45

szSignal1=ALGORAV.iRecAv  
szSignal2=ALGORAV.InterAv  
szSignal3=ALGORAV.TimeAv  
szSignal4=ALGORAV.EneAbsAv  
szSignal5=ALGORAV.EneErrAv  
szSignal6=ALGORAV.DisAv01  
szSignal7=ALGORAV.DisAv02

```

szSignal8=ALGORAV.VelAv01
szSignal9=ALGORAV.VelAv02
szSignal10=ALGORAV.AccAv01
szSignal11=ALGORAV.AccAv02
szSignal12=ALGORAV.ResAv01
szSignal13=ALGORAV.ResAv02
szSignal14=ALGORAV.ExFAv01
szSignal15=ALGORAV.ExFAv02
szSignal16=ALGORAV.GAccAv01
szSignal17=ALGORAV.GAccAv02
szSignal18=ALGORAV.LCellAv01
szSignal19=ALGORAV.LCellAv02
szSignal20=ALGORAV.HeidAv01
szSignal21=ALGORAV.HeidAv02
szSignal22=ALGORAV.TempAv01
szSignal23=ALGORAV.TempAv02
szSignal24=ALGORAV.TempAbsAv01
szSignal25=ALGORAV.TempAbsAv02
szSignal26=ALGORAV.SpeedAv01
szSignal27=ALGORAV.SpeedAv02
szSignal28=ALGORAV.LvdtAv01
szSignal29=ALGORAV.LvdtAv02
szSignal30=ALGORAV.DisConTargetAv01
szSignal31=ALGORAV.DisConTargetAv02
szSignal32=ALGORAV.Press1Av01
szSignal33=ALGORAV.Press1Av02
szSignal34=ALGORAV.Press2Av01
szSignal35=ALGORAV.Press2Av02
szSignal36=ALGORAV.PDForAv01
szSignal37=ALGORAV.PDForAv02
szSignal38=ALGORAV.ServoAv01
szSignal39=ALGORAV.ServoAv02
szSignal40=ALGORAV.SpoolAv01
szSignal41=ALGORAV.SpoolAv02
szSignal42=ALGORAV.ErrAv01
szSignal43=ALGORAV.ErrAv02
szSignal44=ALGORAV.ErrMax01
szSignal45=ALGORAV.ErrMax02

#StartTrigger
szStartTrigger=TRIGGER-1.StartTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StartTriggerType
usStartTriggerType=1

#StartTriggerValue
dStartTriggerValue=1

#AcqTrigger
szAcqTrigger=DEV_OUT.CHANNEL_17

# RISING_EDGE           = 1

```

```
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#AcqTriggerType
usAcqTriggerType=1

#AcqTriggerValue
dAcqTriggerValue=1

#StopTrigger
szStopTrigger=TRIGGER-1.StopTrigger

# RISING_EDGE          = 1
# RISING_LEVEL         = 2
# FALLING_EDGE         = 3
# FALLING_LEVEL        = 4

#StopTriggerType
usStopTriggerType=1

#StopTriggerValue
dStopTriggerValue=1

#FinishTrigger
szFinishTrigger=TRIGGER-1.FinishTrigger

# RISING_EDGE          = 1
# RISING_LEVEL         = 2
# FALLING_EDGE         = 3
# FALLING_LEVEL        = 4

#StopTriggerType
usFinishTriggerType=1

#FinishTriggerValue
dFinishTriggerValue=1

#End of Acquisition Setup File : C:\Manual\Acquisition\D.Acq
```

## ***E. Generator***

```
#Start of Generator Setup File : C:\Manual\Generator\Gen1.Gen
```

```
#Name of the generator Object
```

```
Name=Gen1
```

```
#FROM_FILE      1 - read file signal
#SQUARE         2 - Generate square wave
#SINUS          3 - Generate sinus wave
#TRIANGLE       4 - Generate triangle wave
#DC             5 - Generate DC wave
#RANDOM          6 - Generate random wave
#MANUAL         7 - Generate Manual Ramp
```

```
#GeneratorType
```

```
usGeneratorType=1
```

```
#Filename
```

```
szFileName=swept40.dat
```

```
#signalnumber
```

```
dwSignalNumber=2
```

```
szSignal1=INTERNALALGOOUTPUT1.Reference
```

```
szSignal2=INTERNALALGOOUTPUT2.Reference
```

```
#Period in millisecond
```

```
dwPeriod=2
```

```
#Span 1->100% or more
```

```
nSpan=100
```

```
#Offset
```

```
dOffset=0
```

```
#Counter 0=repeat infinite
```

```
dwCounter=0
```

```
#Amplitude
```

```
dAmplitude=1
```

```
#dutyCycle in %
```

```
dwDutyCycle=50
```

```
#SlopeIncrement
```

```
dSlopeIncrement=0.1
```

```
#StartTrigger
```

```
szStartTrigger=TRIGGER-1.StartTrigger
```

```
# RISING_EDGE          = 1
```

```
# RISING_LEVEL        = 2
```

```
# FALLING_EDGE        = 3
```

```
# FALLING_LEVEL       = 4
```

```
#StartTriggerType
usStartTriggerType=1

#StartTriggerValue
dStartTriggerValue=1

#AcqTrigger
szGenTrigger=TRIGGER-1.RunTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#AcqTriggerType
usGenTriggerType=2

#AcqTriggerValue
dGenTriggerValue=1

#StopTrigger
szStopTrigger=TRIGGER-1.StopTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usStopTriggerType=1

#StopTriggerValue
dStopTriggerValue=1

#FinishTrigger
szFinishTrigger=TRIGGER-1.FinishTrigger

# RISING_EDGE           = 1
# RISING_LEVEL          = 2
# FALLING_EDGE          = 3
# FALLING_LEVEL         = 4

#StopTriggerType
usFinishTriggerType=1

#FinishTriggerValue
dFinishTriggerValue=1

#End of Generator Setup File : C:\Manual\Generator\Gen1.Gen
```



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**Abstract**

During a test, the user may want some data to be displayed, analyzed or/and stored in the computer. This can be made through an acquisition. The acquisition manual explains how to do an acquisition starting from the most simple case: using an acquisition node with an internal trigger. Each chapter adds new information to the previous one: using an external trigger, a master controller, etc. In this annex the user can find different examples of each case.

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