

Protocol Party

BIG Meeting Jan 19 2017

Parameter Tabs - Geometry

LOC_Localiser_2s 03:26 Voxel 2.50 x 2.55 x 2.50+ Tra 0.83+ Rel. SNR 0.83+ TE 30 TR 2000

Summary **Geometry** Contrast Motion

Uniformity CLEAR

FOV RL (mm) 240
AP (mm) 240

FH (mm) 70 (84)

Voxel size RL (mm) 2.5
AP (mm) 2.5

Slice thickness (mm) 2.5 (3)

Recon voxel size (mm) 2.5 (1.36)

fold-over suppression no

Reconstruction matrix 96 (176)

SENSE yes
P reduction (AP) 2

k-tBLAST no

Stacks 1
type parallel
slices 28
slice gap user defined
gap (mm) 0
slice orientation transverse
fold-over direction AP

Act. TR/TE (ms) 2000 / 30
Dyn. scan time 00:02.0
Time to k0 0.994
ACQ matrix M x P 96 x 94
ACQ voxel MPS (mm) 2.50 / 2.55 / 2.50
REC voxel MPS (mm) 2.50 / 2.50 / 2.50
Scan percentage (%) 97.9
Packages 1
Min. slice gap (mm) 0
EPI factor 47
Act. WFS (pix) / BW (Hz) 13.944 / 31.2
BW in EPI freq. dir. (Hz) 2220.2
Min. WFS (pix) / Max. BW... 13.922 / 31.2
Min. TR/TE (ms) 1640 / 18
SPIR offset act./default (...) 135 [220]
SAR / head < 26%
Whole body / level < 0.1 W/kg / normal
SED 0.0 kJ/kg

Minimum FOV should be 220 x 220 = if you go smaller, you should also add fold-over suppression

Accept

LOC_Localiser_2s 03:26 Voxel 2.50 x 2.55 x 2.50+ Tra 0.83+ Rel. SNR 0.83+ TE 30 TR 2000

Summary **Geometry** Contrast Motion Dyn/Ang Postproc Offc/Ang Coils Conflicts

Slice thickness (mm) 2.5 (3)

Recon voxel size (mm) 2.5 (1.36)

Fold-over suppression no

Reconstruction matrix 96 (176)

SENSE yes
P reduction (AP) 2

k-tBLAST no

Stacks 1
type parallel
slices 28
slice gap user defined
gap (mm) 0
slice orientation transverse
fold-over direction AP
fat shift direction P

Minimum number of pa... 1

Slice scan order ascend

PlanAlign no

REST slabs 0

Interactive positioning no

Total scan duration 03:25.9
Rel. SNR 0.833
Act. TR/TE (ms) 2000 / 30
Dyn. scan time 00:02.0
Time to k0 0.994
ACQ matrix M x P 96 x 94
ACQ voxel MPS (mm) 2.50 / 2.55 / 2.50
REC voxel MPS (mm) 2.50 / 2.50 / 2.50
Scan percentage (%) 97.9
Packages 1
Min. slice gap (mm) 0
EPI factor 47
Act. WFS (pix) / BW (Hz) 13.944 / 31.2
BW in EPI freq. dir. (Hz) 2220.2
Min. WFS (pix) / Max. BW... 13.922 / 31.2
Min. TR/TE (ms) 1640 / 18
SPIR offset act./default (...) 135 [220]
SAR / head < 26%
Whole body / level < 0.1 W/kg / normal
SED 0.0 kJ/kg

Accept

Parameter Tabs - Contrast

LOC_Localiser_2s 03:26 Voxel 2.50 x 2.55 x 2.50+ Tra 0.83+ Rel. SNR 0.83+ TE 30 TR 2000

Summary Geometry **Contrast** Motion Dyn/Ang Postproc Offc/Ang Coils Conflicts <<

Scan type	Imaging	Total scan duration	03:25.9
Scan mode	MS	Rel. SNR	0.833
technique	FFE	Act. TR/TE (ms)	2000 / 30
Contrast enhancement	no	Dyn. scan time	00:02.0
Acquisition mode	cartesian	Time to k0	0.994
Fast Imaging mode	EPI	ACQ matrix M x P	96 x 94
shot mode	single-shot	ACQ voxel MPS (mm)	2.50 / 2.55 / 2.50
Echoes	1	REC voxel MPS (mm)	2.50 / 2.50 / 2.50
partial echo	no	Scan percentage (%)	97.9
shifted echo	no	Packages	1
TE	user defined	Min. slice gap (mm)	0
(ms)	30		
Flip angle (deg)	90		
TR	user defined		
(ms)	2000		
Halfscan	no		
Water-fat shift	minimum	SPIR offset act./default (...)	135 [220]
Shim	auto	SAR / head	< 26 %
Fat suppression	SPIR	Whole body / level	< 0.1 W/kg / normal
strength	strong	SED	0.0 kJ/kg

Reducing TE can help achieve enough slices in a short TR, If you reduce TR less then 2.5 secs, you should think about reducing the flip angle (83 is suggested for a TR of 2 secs)

LOC_Localiser_2s 03:26 Voxel 2.50 x 2.55 x 2.50+ Tra 0.83+ Rel. SNR 0.83+ TE 30 TR 2000

Summary Geometry **Contrast** Motion Dyn/Ang Postproc Offc/Ang Coils Conflicts <<

TE	user defined	Total scan duration	03:25.9
(ms)	30	Rel. SNR	0.833
Flip angle (deg)	90	Act. TR/TE (ms)	2000 / 30
TR	user defined	Dyn. scan time	00:02.0
(ms)	2000	Time to k0	0.994
Halfscan	no	ACQ matrix M x P	96 x 94
Water-fat shift	minimum	ACQ voxel MPS (mm)	2.50 / 2.55 / 2.50
Shim	auto	REC voxel MPS (mm)	2.50 / 2.50 / 2.50
Fat suppression	SPIR	Scan percentage (%)	97.9
strength	strong	Packages	1
frequency offset	user defined (defa ...)	Min. slice gap (mm)	0
offset (Hz)	135 (100)	EPI factor	47
Water suppression	no	Act. WFS (pix) / BW (Hz)	13.944 / 31.2
MTC	no	BW in EPI freq. dir. (Hz)	2220.2
Diffusion mode	no	Min. WFS (pix) / Max. BW...	13.922 / 31.2
SAR mode	high	Min. TR/TE (ms)	1640 / 18
B1 mode	default	SPIR offset act./default (...)	135 [220]
PNS mode	moderate	SAR / head	< 26 %
Gradient mode	default	Whole body / level	< 0.1 W/kg / normal
SoftTone mode	no	SED	0.0 kJ/kg

Fat Suppression

NewFourCond 05:50 Voxel 3.00 x 3.08 x 3.00 Tra Rel. SNR 1.00 TE 35 TR 2000

Summary Geometry **Contrast** Motion Dyn/Ang Postproc Offc/Ang Coils Conflicts <<

shifted echo	no	Total scan duration	05:50.0
TE	user defined	Rel. SNR	1
(ms)	35	Act. TR/TE (ms)	2000 / 35
Flip angle (deg)	90	Dyn. scan time	00:02.0
TR	user defined	Time to k0	00:01.0
(ms)	2000	ACQ matrix M x P	80 x 78
Halfscan	no	ACQ voxel MPS (mm)	3.00 / 3.08 / 3.00
Water-fat shift	minimum	REC voxel MPS (mm)	3.00 / 3.00 / 3.00
Shim	auto	Scan percentage (%)	97.5
Fat suppression	SPIR	Packages	1
strength	strong	Min. slice gap (mm)	0
frequency offset	user defined	EPI factor	39
Water suppression	no	Act. WFS (pix) / BW (Hz)	14.094 / 30.8
MTC	no	W in EPI freq. dir. (Hz)	2557.3
Diffusion mode	no	Min. WFS (pix) / Max. BW...	14.073 / 30.9
SAR mode	high	Min. TR/TE (ms)	1787 / 18
B1 mode	default	SAR / local torso	< 52%
PNS mode	high	Whole body / level	< 0.7 W/kg / normal
Gradient mode	default	SED	< 0.2 kJ/kg
SofTone mode	yes	B1+rms	1.17 uT

Allowed values:

 no
 SPIR
 SPAIR
 ProSet

NewFourCond 05:50 Voxel 3.00 x 3.08 x 3.00 Tra Rel. SNR 1.00 TE 35 TR 2000

Summary Geometry **Contrast** Motion Dyn/Ang Postproc Offc/Ang Coils Conflicts <<

shifted echo	no	Total scan duration	05:50.0
TE	user defined	Rel. SNR	1
(ms)	35	Act. TR/TE (ms)	2000 / 35
Flip angle (deg)	90	Dyn. scan time	00:02.0
TR	user defined	Time to k0	00:01.0
(ms)	2000	ACQ matrix M x P	80 x 78
Halfscan	no	ACQ voxel MPS (mm)	3.00 / 3.08 / 3.00
Water-fat shift	minimum	REC voxel MPS (mm)	3.00 / 3.00 / 3.00
Shim	auto	Scan percentage (%)	97.5
Fat suppression	SPIR	Packages	1
strength	strong	Min. slice gap (mm)	0
frequency offset	user defined (defa...	EPI factor	39
offset (Hz)	175.00	Act. WFS (pix) / BW (Hz)	14.094 / 30.8
Water suppression	no	BW in EPI freq. dir. (Hz)	2557.3
MTC	no	Min. WFS (pix) / Max. BW...	14.073 / 30.9
Diffusion mode	no	Min. TR/TE (ms)	1787 / 18
SAR mode	high	SPIR offset act./default (...)	175 [220]
B1 mode	default	SAR / local torso	< 52%
PNS mode	high	Whole body / level	< 0.7 W/kg / normal
Gradient mode	default	SED	< 0.2 kJ/kg

Motion and Dynamics

LOC_Localiser_2s 03:26 Voxel 2.50 x 2.55 x 2.50+ Tra Rel. SNR 0.83+ TE 30 TR 2000

Summary Geometry Contrast **Motion** Dyn/Ang Postproc Offc/Ang Coils Conflicts

Cardiac synchronization	no	Total scan duration	03:25.9
Respiratory compensation	no	Rel. SNR	0.833
Navigator respiratory comp	no	Act. TR/TE (ms)	2000 / 30
Flow compensation	no	Dyn. scan time	00:02.0
Temporal slice spacing	default	Time to k0	0.994
fMRI echo stabilisation	no	ACQ matrix M x P	96 x 94
NSA	1	ACQ voxel MPS (mm)	2.50 / 2.55 / 2.50
		REC voxel MPS (mm)	2.50 / 2.50 / 2.50
		Scan percentage (%)	97.9
		Packages	1
		Min. slice gap (mm)	0
		EPI factor	47
		Act. WFS (pix) / BW (Hz)	13.944 / 31.2
		BW in EPI freq. dir. (Hz)	2220.2
		Min. WFS (pix) / Max. BW...	13.922 / 31.2
		Min. TR/TE (ms)	1640 / 18
		SPIR offset act./default (...)	135 [220]
		SAR / head	< 26 %
		Whole body / level	< 0.1 W/kg / normal
		SED	0.0 kJ/kg

LOC_Localiser_2s 03:26 Voxel 2.50 x 2.55 x 2.50+ Tra Rel. SNR 0.83+ TE 30 TR 2000

Summary Geometry Contrast Motion **Dyn/Ang** Postproc Offc/Ang Coils Conflicts

Angio / Contrast enh.	no	Total scan duration	03:26.0
Quantitative flow	no	Rel. SNR	0.833
Manual start	yes	Act. TR/TE (ms)	2000 / 30
Dynamic study	individual	Dyn. scan time	00:02.0
dyn scans	96	Time to k0	00:01.0
dyn scan times	shortest	ACQ matrix M x P	96 x 94
fov time mode	default	ACQ voxel MPS (mm)	2.50 / 2.55 / 2.50
dummy scans	5	REC voxel MPS (mm)	2.50 / 2.50 / 2.50
immediate subtraction	no	Scan percentage (%)	97.9
fast next scan	no	Packages	1
synch. ext. device	yes	Min. slice gap (mm)	0
start at dyn.	1	EPI factor	47
interval (dyn)	1	Act. WFS (pix) / BW (Hz)	13.944 / 31.2
dyn stabilization	no	BW in EPI freq. dir. (Hz)	2220.2
prospect. motion corr.	no (yes)	Min. WFS (pix) / Max. BW...	13.922 / 31.2
Keyhole	no	Min. TR/TE (ms)	1640 / 18
Arterial Spin labeling	no	SPIR offset act./default (...)	135 [220]
		SAR / head	< 25 %
		Whole body / level	< 0.1 W/kg / normal
		SED	0.0 kJ/kg

Currently Open Documents

- asl_CBF_draft.sh
- asl_CBF.sh
- Example_script_for_grey_mCBF.sh
- LOC_Localiser_2s.txt
- multi_phase_asl_trail_1.sh

Name

- fMRI_ghost_3.png
- FMRI_STAB_13062016_15.png
- FS175FCNR2.ica
- geometry_tab1.jpg
- geometry_tab2.jpg
- Ghost1_13_06_16.jpg
- Ghost2_mBIRN_13_06_16.jpg
- Ghosts_13062016.png
- IM-0006-0001.ica
- JP_01.png
- JP_02.png
- JP_03.png
- JP_04.png
- JP_05.png
- JPim1_meanvol.nii.gz
- JPim1_sigma.nii.gz
- JPim1_variance.nii.gz
- JPim1.nii.gz
- Jumping_phantom
- Jumping_phantom.zip
- JumpingPhantom.gif
- Lees_scans
- LOC_Localiser_2s.txt
- log201608260000.zip
- log201608310000.zip
- log201609060000.zip
- motion_tab2.jpg
- NewFourCondFS175_601
- NewFourCondFSdefault_501
- Signal_variance
- Signal_variance.zip
- Signal_Variance2
- Signal_Variance2.zip
- SS0064_02b_FaceEmoLoc_SENSE
- SS0064_02b_FaceEmoLoc_SENSE
- SS0064_02b_Transcend_SENSE_5
- SS0064_02b_Transcend_SENSE_7
- SS0064_02b_Transcend_SENSE_8
- SS0070_03_ChanDowningEyes_SEN
- SS0070_03_ChanDowningEyes_SEN
- SS0070_03_ChanDowningEyes_SEN
- SS0070_03_ChanDowningEyes_SEN
- SS0070_03_ChanDowningEyes_SEN
- SS0070_03_ChanDowningEyes_SEN
- SS0070_03_ChanDowningEyes_SEN

MRSDATA > Artefact_2016 > LOC

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1 SmartSelect = "yes";
2 Coil 1 (exclude) = "None";
3 Uniformity = "CLEAR";
4 FOV RL (mm) = 240;
5 AP (mm) = 240;
6 FH (mm) = 70;
7 Voxel size RL (mm) = 2.5;
8 AP (mm) = 2.5;
9 Slice thickness (mm) = 2.5;
10 Recon voxel size (mm) = 2.5;
11 Fold-over suppression = "no";
12 Reconstruction matrix = 96;
13 SENSE = "yes";
14 P reduction (AP) = 2;
15 k-t BLAST = "no";
16 Stacks = 1;
17 type = "parallel";
18 slices = 28;
19 slice gap = "user defined";
20 gap (mm) = 0;
21 slice orientation = "transverse";
22 fold-over direction = "AP";
23 fat shift direction = "P";
24 Stack Offc. AP (P=+mm) = -2.4133749;
25 RL (L=+mm) = -2.60287857;
26 FH (H=+mm) = 38.9842186;
27 Ang. AP (deg) = -1.87120783;
28 RL (deg) = -9.21196556;
29 FH (deg) = -0.337474436;
30 Free rotatable = "no";
31 Minimum number of packages = 1;
32 Slice scan order = "ascend";
33 Large table movement = "no";
34 PlanAlign = "no";
35 REST slabs = 0;
36 Interactive positioning = "no";
37 Patient position = "head first";
38 orientation = "supine";
39 Scan type = "Imaging";
40 Scan mode = "MS";
41 technique = "FFE";
42 Contrast enhancement = "no";
43 Acquisition mode = "cartesian";
44 Fast Imaging mode = "EPI";
45 shot mode = "single-shot";
46 Echoes = 1;
47 partial echo = "no";
48 shifted echo = "no";
49 TE = "user defined";
50 (ms) = 30;
51 Flip angle (deg) = 90;
52 TR = "user defined";
53 (ms) = 2000;
54 Halfscan = "no";
55 Water-fat shift = "minimum";
56 Shim = "auto";
57 Fat suppression = "SPIR";
58 strength = "strong";
59 frequency offset = "user defined";
60 offset (Hz) = 135;
61 Water suppression = "no";
62 MTC = "no";
63 Diffusion mode = "no";
64 SAR mode = "high";
65 B1 mode = "default";
66 PNS mode = "moderate";
67 Gradient mode = "default";
68 SoftTone mode = "no";
69 Cardiac synchronization = "no";
70 Respiratory compensation = "no";
71 Navigator respiratory comp = "no";
72 Flow compensation = "no";
73 Temporal slice spacing = "default";
74 fMRI echo stabilisation = "no";
75 NSA = 1;
76 Angio / Contrast enh. = "no";

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Shape Fill

Shape Outline

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Comments

Registered Charity No. 1

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conditions of the Bangor

Paul Downing

mail: Patricia Bestelmeyer +

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a theory of fMRS" for Scandinavian Psychiatry

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Minimum number of packages = 1;
Slice scan order = "ascend";
Large table movement = "no";
PlanAlign = "no";
REST slabs = 0;
Interactive positioning = "no";
Patient position = "head first";
orientation = "supine";
Scan type = "Imaging";
Scan mode = "MS";
technique = "FFE";
Contrast enhancement = "no";
Acquisition mode = "cartesian";
Fast Imaging mode = "EPI";
shot mode = "single-shot";
Echoes = 1;
partial echo = "no";
shifted echo = "no";
TE = "user defined";
(ms) = 30;
Flip angle (deg) = 90;
TR = "user defined";
(ms) = 2000;
Halfscan = "no";
Water-fat shift = "minimum";
Shim = "auto";
Fat suppression = "SPIR";
strength = "strong";
frequency offset = "user defined";
offset (Hz) = 135;

```

```

Minimum number of packages = 1;
Slice scan order = "ascend";
Large table movement = "no";
PlanAlign = "no";
REST slabs = 0;
Interactive positioning = "no";
Patient position = "head first";
orientation = "supine";
Scan type = "Imaging";
Scan mode = "MS";
technique = "FFE";
Contrast enhancement = "no";
Acquisition mode = "cartesian";
Fast Imaging mode = "EPI";
shot mode = "single-shot";
Echoes = 1;
partial echo = "no";
shifted echo = "no";
TE = "user defined";
(ms) = 30;
Flip angle (deg) = 90;
TR = "user defined";
(ms) = 2000;
Halfscan = "no";
Water-fat shift = "minimum";
Shim = "auto";
Fat suppression = "SPIR";
strength = "strong";
frequency offset = "user defined";
offset (Hz) = 135;

```

Water suppression =	"no";	
MTC =		"no";
Diffusion mode =	"no";	
SAR mode =	"high";	
B1 mode =	"default";	
PNS mode =	"moderate";	
Gradient mode =	"default";	
SofTone mode =	"no";	
Cardiac synchronization =	"no";	
Respiratory compensation =	"no";	
Navigator respiratory comp =	"no";	
Flow compensation =	"no";	
Temporal slice spacing =	"default";	
fMRI echo stabilisation =	"no";	
NSA =		1;
Angio / Contrast enh. =	"no";	
Quantitative flow =	"no";	
Manual start =	"yes";	
Dynamic study =	"individual";	
dyn scans =	96;	
dyn scan times =	"shortest";	
fov time mode =	"default";	
dummy scans =	5;	
immediate subtraction =	"no";	
fast next scan =	"no";	
synch. ext. device =	"yes";	
start at dyn. =	1;	
interval (dyn) =	1;	
dyn stabilization =	"no";	

prospect. motion corr. =	"no";	
Keyhole =		"no";
Arterial Spin labeling =	"no";	
Preparation phases =		"full";
Interactive F0 =	"no";	
B0 field map =		"no";
MIP/MPR =		"no";
Images =		"M", (3) "no";
Autoview image =		"M";
Calculated images =		(4) "no";
Reference tissue =		"Grey matter";
Recon compression =		"No";
Preset window contrast =	"soft";	
Reconstruction mode =		"real time";
reuse memory =		"no";
Save raw data =		"no";
Hardcopy protocol =		"no";
Image filter =		"system default";
Geometry correction =		"default";
IF_info_seperator =		1634755923;
Total scan duration =		"03:26.0";
Rel. SNR =		0.833332419;
Act. TR/TE (ms) =	"2000 / 30";	
Dyn. scan time =	"00:02.0";	
Time to k0 =		"00:01.0";
ACQ matrix M x P =		"96 x 94";
ACQ voxel MPS (mm) =		"2.50 / 2.55 / 2.50";
REC voxel MPS (mm) =		"2.50 / 2.50 / 2.50";
Scan percentage (%) =		97.9166641;
Packages =		1;
Min. slice gap (mm) =		-0;
EPI factor =		47;
Act. WFS (pix) / BW (Hz) =	"13.944 / 31.2";	
BW in EPI freq. dir. (Hz) =	"2220.2";	
Min. WFS (pix) / Max. BW (Hz) =	"13.922 / 31.2";	
Min. TR/TE (ms) =		"1640 / 18";
SPIR offset act./default (Hz) =	"135 [220]";	
SAR / head =		"< 25 %";
Whole body / level =		"< 0.1 W/kg / normal";
SED =		" 0.0 kJ/kg";
B1+rms =		"1.18 uT";
Max B1+rms =		"1.18 uT";
PNS / level =		"63 % / normal";
dB/dt =		"53.8 T/s";
Sound Pressure Level (dB) =	17.287077;	

Important parameters

FOV RL (mm) = 240;
AP (mm) = 240;
FH (mm) = 70; (set from number of slices x slice thickness)

If smaller than 200 set fold-over suppression to yes, and use 20 for both directions.

SENSE = "yes";
P reduction (AP) = 2;

We usually use SENSE of 2. Higher SENSE factor, although it will give you more slices in a shorter TR, will also increase artefacts

fold-over direction = "AP"; - Typical direction for EPI scans – distortion remains, but is from the back to the front, so does not distort symmetry (images look better)

Minimum number of packages = 1;

You want to keep an eye on this as you change parameters – will switch to 2 if you are asking the system to try to do too many slices (with too many PE steps) within the TR you have set – this would double the time for 1 dynamic

TE = "user defined";
(ms) = 30;
Flip angle (deg) = 90;
TR = "user defined";
(ms) = 2000;

Standard timings – the flip angle could be reduced to 83, but 90 works fine.

Water-fat shift = "minimum";

For some protocols, we tweak this parameter and set it, but for most scans you will want to keep it to a minimum – this will also avoid conflicts if you change some other parameter that affects WFS.

Slice scan order = "ascend";

Note this is where you can change from ascending to interleaved. On Philips "Default" is a typical odd even interleave acquisition. "Interleaved" IS NOT! It will interleave slices on the basis of the square root of the number of slices (rounded up) which is not intuitive, and can be hard to compensate for when doing slice timing correction

Fat suppression = "SPIR";
strength = "strong";
frequency offset = "user defined";
offset (Hz) = 135;

This is the one you will definitely want to change in your sequence – use 135 for the offset. The default setting leads to some interesting off resonance effects where the CSF pulsation causes a phase and magnitude fluctuation in the image.

Gradient mode = "default";
SoftTone mode = "no";

These two interact. You can not use softone unless the gradient mode is default (or possibly enhanced). Softone reduces the noise of the gradients by slowing down the ramp time for the imaging gradients as they are applied – this has a consequence on the maximum number of slices you can acquire for any given TE, TR combo. You have three options here – Yes to turn Softone on, no to leave it off, and user defined to set the amount of softone your self. This can be useful if you want to reduce the noise as much as possible.

PNS mode = "moderate";

Keep this at moderate – will also keep noise down.

Manual start = "yes";

Dynamic study = "individual"; (sets up for an fMRI run)

dyn scans = 96; (Number of volumes)

dyn scan times = "shortest"; (to go as fast as you can)

fov time mode = "default";

dummy scans = 5;

immediate subtraction = "no";

fast next scan = "no";

synch. ext. device = "yes"; (sends TTL pulse)

start at dyn. = 1; (when the first TTL is sent)

interval (dyn) = 1; (when the next will be sent – will repeat every interval)

dyn stabilization = "no"; (do not use this in “yes” mode)

prospect. motion corr. = "no"; (same here – does not always work as advertised)