Robert C. Byrd Green Bank Telescope
NRAO Green Bank

Toney Minter and Dana Balser

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GBT SOFTWARE PROJECT NOTE 22.0

Full List Of Mappings Between GO Keywords And YGOR Parameters

HTML version Available[1]

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[1] http://www.gb.nrao.edu/GBT/MC/doc/dataproc/gbtGOKeywords/gbtGOKeywords/gbtGOKeywordsMapping.html

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Abstract

This document describes all the GO Keywords and their possible values. GO Keywords are used within GO Tables to setup the GBT for observations.

N.B. This document will be continuously under construction while GO is being developed. Thus the reader should frequently check for new versions of this document.

History

13th May 2002 Initial version.

1 Introduction

Every setup and built-in procedure parameter in the GBT Observer's interface (GO) has a predefined keyword. When a value is assigned to a keyword in a GO table the corresponding parameter(s) are set in hardware or the value is retained for use when a procedure is called. Most keywords have unique names in the system, but some, like bandwidth, are repeated in different devices (spectral processor, spectrometer, etc.). Hence, every keyword is assigned to a group which is designated by a keyword prefix. For example, sp.bandwidth is the bandwidth of the spectral processor. If a keyword applies to only one device, the prefix may be omitted, but the safest thing is to use it. The prefixes assigned so far are listed below.

Keywords may be written in their shortest, unambiguous form, e.g. sp.band, but for table readability it is usually a good idea to use the full name or assign a good alias. The shortened form is better left to interactive assignment on the command line of the command line window where conflicts are caught immediately and help is available on the possible choices.

2 Keyword Prefixes

Keywords are associated with specific hardware devices or with the procedure set. A few keywords naturally have the same name on different devices so every keyword has a prefix to designate its device group, e.g. dcr.integrationtime. The prefixes assigned so far are shown in Table 1.

Keyword Prefix	Device
proc	Procedures
sc	Scan Coordinator
ant	Antenna
lo1	LO1
conv	Converter Rack
ifrack	IF Rack
algfilt	Analog Filter Rack
rx	Currently selected receiver
rxpf1	Prime Focus 1 Receiver
rxpf2	Prime Focus 2 Receiver
rx1to2	21 cm Receiver
rx2to3	11 cm Receiver
rx4to6	6 cm Receiver
rx8to10	3 cm Receiver
rx12to18	2 cm Receiver
rx18to26	1 cm Receiver
rx26to40	8 mm Receiver
rx40to52	6 mm Receiver
rx65to95	4 mm Receiver
rx95to115	3 mm Receiver
pfsup	Prime Focus Support Rack
bcpm	Berkley-CalTech Pulsar Machine
dcr	Digital Continuum Receiver
spm	Spectrometer
sp	Spectral Processor

3 GO Keyword Types

GO Keywords values can be of several types. These are:

floats Keywords of the float type can take on any numerical value. Sometimes the range of allowed values is limited. For example, the rest frequency of the observations must be greater than zero.

integers Keywords of this type can only be integers. Sometimes the range of allowed values is limited.

strings Must be enclosed in a pair of double quotes. For example,

sc.proj_id = "GBT-01A-075"

boolean Currently, consists of the two strings "T" and "F".

enumerated Some keywords are limited to a few possible values. These keywords are of the enumeration type. The possible values consist of specific string values. For example, the 1 cm receiver beam switching parameter can be either

rx18to26.beam_ctrl = "computer"

or

rx18to26.beam_ctrl = "manual"

sexagecimal Presently, sexagesimal formats for time, R.A., and Dec. constants are HH:MM:SS.S and sDD:MM:SS.S. No whitespace is allowed in this type.

arrays Some keywords are actually arrays. For example, there are up to eight IF center frequencies that can be set in the spectral processor, one for each IF channel. As in glish, keyword arrays are subscripted with square brackets, and ranges may be specified. Some possibilities are

Set the second IF channel center frequency to 256.8 MHz.

sp.iffrequency[2] = 256.8

Set IF channels 1 through 4 to separate center frequencies.

sp.iffrequency[1:4] = [245.0, 255.0, 245.0, 255.0]

Set IF channels 1, 3, and 5 to separate center frequencies.

sp.iffrequency[1,3,5] = [245.0, 255.0, 245.0]

Set all IF center frequencies to 250.0 MHz.

sp.iffrequency = 250

If there is a mismatch between the number of indices in the keyword index array and the number of values to the right of the equal sign, you will get a warning, but the assignment will be executed anyway. Extra values will be ignored. If there are too few values, the last value will be assigned to all remaining keyword array members specified. More complex glish index syntax, such as [1,2,4:6], or wild cards are not recognized by the table parser. If the keyword is not an array, the index will be ignored.

A keyword array can be an array of any of the above types (floats, integers, strings, boolean or enumerated) except sexagecimal.

4 GO Keywords

4.1 Procedures

Implemented but not yet documented.

4.2 Scan Coordinator

Implemented but not yet documented.

4.3 Antenna

Implemented but not yet documented.

4.4 LO System

4.4.1 LO1

This section is currently being developed.

- lo1.lo_config
- lo1.def_vel chosen then the src_vel keyword will specify the unit-less value of the
- lo1.src_vel
- lo1.numfswoffsets
- lo1.ref_freq_1 The reference frequency offset 1 in MHz. This keyword is only used when
- lo1.ref_freq_2 The reference frequency offset 2 in MHz. This keyword is only used when
- lo1.ref_frame
- lo1.rest_freq
- lo1.tolerance
- lo1.testtone_freq
- lo1.if_center_freq
- lo1.sideband sideband_b keyword values to the current value of sideband.
- lo1.power_level
- lo1.auto_power_level
- lo1.testtone_power_level
- lo1.use_offsets
- lo1.counter_band
- lo1.counter_resolution
- lo1.s1

- lo1.s2
- lo1.s3
- lo1.s4
- lo1.s5
- lo1.s6
- lo1.s7
- lo1.s8
- lo1.s9
- lo1.s10
- lo1.s11
- lo1.s12
- lo1.s13
- lo1.s14
- lo1.s15

lo1.lo_config

Description: Defines the configuration of LO1A and LO1B. Either LO1A or LO1B can be used as a tracking LO, with the other unused or operating as a test tone generator.

GO Values: "TrackA_TToneB","TrackB_TToneA", "TrackA_BNotUsed","TrackB_ANotUsed"

Units: N/A

Example of Use: lo1.lo_config = "TrackA_BNotUsed"

YGOR parameter: loConfig in LO1 Manager

YGOR values: "TrackA_TToneB", "TrackB_TToneA", "TrackA_BNotUsed", "TrackB_ANotUsed"

YGOR to GO mapping: one to one

lo1.def_vel

Description: The velocity definition which specifies how the source velocity is translated into frequency for Doppler tracking. Possible choices are 'RELATIVISTIC', 'OPTICAL', 'RADIO', or 'Z'. If redshift (z) is chosen then the src_vel keyword will specify the unit-less value of the redshift.

N.B. **The 'Z' option is not yet implemented in YGOR.**

GO Values: RELATIVISTIC, OPTICAL, RADIO

Units: N/A

Example of Use: lo1.def_vel = "RADIO"

YGOR parameter: velocityDefinition in LO1 Manager

YGOR values: "Radio", "Optical", "Relativistic"

YGOR to GO mapping: one to one

lo1.src_vel

Description: The velocity, in units of km/s, which determines the sky frequency of the spectrometer passband. The Doppler correction equations are used to convert this velocity to frequency using the rest frame specified by the velocity definition and reference frame. It is assumed that this velocity is constant (no acceleration or jerk terms) and that it is valid for all times (i.e. epoch=0).

GO Values: float

Units: km/s or unit-less if def_vel = Z

Example of Use: lo1.src_vel = 100.03

YGOR parameter: sourceVelocity in LO1 Manager

YGOR to GO mapping: one to many

lo1.numfswoffsets

Description: The number of frequency switching offsets determines the size of the fsw_offsets array. The number of frequency switching offsets must be larger than zero and less than 5. Changing the number of frequency offsets will change the fsw_offsets array and possibly the values of rest_freq_1 and rest_freq_2.

GO Values: integer

Allowed Range: $0 \leq$ lo1.numfswoffsets ≤ 5

Units: N/A

Example of Use: lo1.num_fsw_offsets = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.ref_freq_1

Description: The reference frequency offset 1 in MHz. This keyword is only used when the switching mode is set to one of the frequency switching options.

GO Values: float

Units: MHz

Example of Use: lo1.freq_freq_1 = 2.5

YGOR parameter:

YGOR to GO mapping:

lo1.ref_freq_2

Description: The reference frequency offset 2 in MHz. This keyword is only used when the switching mode is set to one of the frequency switching options.

GO Values: float

Units: MHz

Example of Use: lo1.ref_freq_1 = -2.5

YGOR parameter:

YGOR to GO mapping:

lo1.ref_frame

Description: Inertial reference frame for Doppler tracking. The source velocity is expressed in terms of the selected rest frame. Possible values are 'Local', 'Barycenteric', 'Heliocentric', 'LSR', 'LSRD', 'Galactocentric', 'Localgroup', and 'CMB'.

Local local topocentric rest frame of the telescope.

Barycentric the center of mass of the solar system.

Heliocentric the center of the Sun.

LSR or LSRK the kinematic local standard of rest which is a point in the vicinity of the Sun which has the motion of 20 km/s toward RA=18:00:00.0, Dec=30:00:00 (1900).

LSRD the dynamical local standard of rest which is a point in the vicinity of the Sun in a circular orbit around the Galactic Center. This peculiar motion is 16.6 km/s toward RA=17:49:58.7, Dec=28:07:04 (J2000).

Galactocentric the Galactic Center and is referenced from the dynamical LSR rest frame assuming the Sun is moving 220 km/s toward Ra=21:12:01.1, Dec=48:19:47 (J2000).

Localgroup defined as the standard of rest with respect to the Local Group of Galaxies.

CMB defined as the standard of rest with respect to the Cosmic Microwave Background.

N.B. The Localgroup and CMB reference frames are not yet implemented in the YGOR LO1 manager.

N.B. At some observatories heliocentric really means barycentric. In general there are two different LSR frames: kinematic and dynamical. Since LSR generally corresponds to the kinematic local standard of rest LSR=LSRK. LSRK is derived from "standard solar motion" while LSRD is derived from "basic solar motion."

GO Values: Local, Barycentric, Heliocentric, LSR, LSRD, Galactocentric, Localgroup, Cmd

Units: N/A

Example of Use: lo1.ref_frame = "LSR"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.rest_freq

Description: The frequency with respect to the astronomical object in MHz (i.e., no Doppler correction). For example, observations of the 21cm line of HI would set the rest frequency to 1420.4058 MHz. For continuum observations it is the sky center frequency of the final passband when Doppler tracking is not required. In continuum observations, the following should also be set:
ref_frame = TOPOCENTER, vel_def = RADIO, and src_vel = 0.

GO Values: float

Units: MHz

Example of Use: lo1.rest_freq = 1420.4058

YGOR parameter: restFrequency in LO1 Manager

YGOR to GO mapping: one to one

lo1.tolerance

Description: The desired frequency tolerance in Hz for Doppler updates. The minimum value is 1 Hz.

GO Values: float

Units: Hz

Example of Use: lo1.tolerance = 10.0

YGOR parameter:

YGOR to GO mapping:

lo1.testtone_freq

Description: The frequency of the testtone signal in MHz.

GO Values: float

Units: MHz

Example of Use: lo1.testtone_freq = 1245.67

YGOR parameter:

YGOR to GO mapping:

lo1.if_center_freq

Description: The desired IF center frequency after the first mixer (LO1) in MHz. Effectively the sky frequency and the IF center frequency are used to determine the LO1 frequency. This value depends on the front end receiver chosen and will be set by default to the following values when the effective receiver is selected: 0.290 - 0.395 GHz (1080 MHz), 0.385 - 0.520 GHz (1080 MHz), 0.510 - 0.690 GHz (1080 MHz), 0.680 - 0.920 GHz (1080 MHz), 0.910 - 1.230 GHz (1080 MHz), 1.15 - 1.73 GHz (3000 MHz), 1.73 - 2.60 GHz (6000 MHz), 3.95 - 5.85 GHz (3000 MHz), 8.0 - 10.1 GHz (3000 MHz), 12.0 - 15.4 GHz (3000 MHz), 18.0 - 22.4 GHz (6000 MHz), 22.0 - 26.5 GHz (6000 MHz), 40.0 - 50.0 GHz (6000 MHz). These default values may be overridden, however, by using the 'if_center_frequency' parameter.

GO Values: float

Units: MHz

Example of Use: lo1.if_center_freq = 3000.0

YGOR parameter:

YGOR to GO mapping:

lo1.sideband

Description: The LO1 synthesizer sideband. Possible values are 'upper' or 'lower'. The sideband will be set by default when the effective receiver is selected using the following values: 0.290 - 0.395 GHz (lower), 0.385 - 0.520 GHz (lower), 0.510 - 0.690 GHz (lower), 0.680 - 0.920 GHz (lower), 0.910 - 1.230 GHz (lower), 1.15 - 1.73 GHz (lower), 1.73 - 2.60 GHz (lower), 3.95 - 5.85 GHz (lower), 8.0 - 10.1 GHz (lower), 12.0 - 15.4 GHz (upper), 18.0 - 22.4 GHz (upper), 22.0 - 26.5 GHz (upper), 40.0 - 50.0 GHz (upper). The sideband parameter automatically sets both the sideband_a and sideband_b keyword values to the current value of sideband.

GO Values: upper, lower

Units: N/A

Example of Use: lo1.sideband = "upper"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.power_level

Description: The LO1 synthesizer output power level in dBm. This is typically set automatically using the auto_power_level parameter when a receiver is selected. Possible values range from -20 to +13.5dBm.

GO Values: float

Allowed Range: -20 $\leq$ lo1.power_level $\leq$ +13.5

Units: dBm

Example of Use: lo1.power_level = 2.5

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.auto_power_level

Description: Enables LO1 automatic power level setting. If set to 'ON' the LO1 synthesizer output power level will be set automatically depending on the selected receiver. Otherwise if 'OFF' the parameter 'power_level' is used to set the output power level. The automatic power level is optimized from previous experience for each receiver.

GO Values: T, F

Units: N/A

Example of Use: lo1.auto_power_level = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.testtone_power_level

Description: The testtone synthesizer output power level in dBm. Possible values range from -20 to +13.5dBm.

GO Values: float

Allowed Range: -20 $\leq$ lo1.testtone_power_level $\leq$ 13.5

Units: dBm

Example of Use: lo1.testtone_power_level = 4.5

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.use_offsets

Description: A boolean to determine if the offset positions are used to when calculating frequency information (e.g., Doppler tracking). The default setting is 'ON'.

GO Values: T, F

Units: N/A

Example of Use: lo1.use_offsets = "OFF"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.counter_band

Description: This parameter determines which band the frequency counter will use.

GO Values: "band 1", "band 2", "band 3"

Units: N/A

Example of Use: lo1.counter_band = "band 1"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.counter_resolution

Description: Resolution of the counter and by extension the sample rate.

GO Values: "1 Hz", "10 Hz", "100 Hz", "1 kHz", "10 kHz"

Units: N/A

Example of Use: lo1.counter_resolution = "10 Hz"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s1

Description: A copy of the LO1A and LO1B synthesizer frequencies are available to be routed to the LO Counter or to the Test Tone outputs of the LO1 rack. One input signal (LO1A or LO1B generated) into the S1 switch is routed on to be available for the LO Counter or the Test Tone outputs (via the S3 switch) while the other input signal into the S1 switch is terminated to ground. When the S1 switch is in the "thru" position the LO1B generated signal is terminated to ground while the LO1A generated signal is routed on to the S3 switch. When the S1 switch is in the "cross" position the LO1A generated signal is terminated to ground while the LO1A generated signal is routed on to the S3 switch. The signal routed on to the S3 switch will be referred to as the "LO monitor signal".

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: "thru", "cross"

Units: N/A

Example of Use: lo1.s1 = "thru"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s2

Description: A copy of the LO1A and LO1B synthesizer frequencies are available to be routed to the receiver LO inputs. One input signal (LO1A or LO1B generated) into the S2 switch is routed on to be available to the LO receiver output ports 1-18 of the LO1 rack (via the S4 and S5, S6 & S7 switches) while the other input signal into the S2 switch is routed on to be available to the LO receiver output ports 19-24 of the LO1 rack (via the S8 switch). When the S2 switch is in the "thru" position the LO1A generated signal is routed on to the S4 switch while the LO1B generated signal is routed on to the S8 switch. When the S2 switch is in the "cross" position the LO1B generated signal is routed on to the S4 switch while the LO1A generated signal is routed on to the S8 switch. The signal routed on to the S4 switch will be referred to as the "LO signal".

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: "thru", "cross"

Units: N/A

Example of Use: lo1.s2 = "thru"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s3

Description: Either of the LO1A or the LO1B generated LO signals (the "LO monitor signal") can be available to be routed to the LO Counter or the Test Tone outputs of the LO1 rack. The S3 switch determines where the LO monitor signal is routed. The S3 switch can be in 5 different positions labeled numerically by an integer in the range 0 to 4. When the S3 switch is set to 0 (zero) there is no power on the LO monitor signal and the S3 switch is in a "undefined" state. When the S3 switch is set to 1 the LO monitor signal is sent to the High Resolution LO Counter. When the S3 switch is set to 2 the LO monitor signal is sent to the Low Resolution LO Counter. When the S3 switch is set to 3 the LO monitor signal is made available to the Test Tone outputs by routing the LO monitor signal to the S11 switch. When the S3 switch is set to 4 the LO monitor signal is terminated to ground.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $0 \leq$ lo1.s3 ≤ 4

Units: N/A

Example of Use: lo1.s3 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s4

Description: Either of the LO1A or the LO1B generated LO signals (the "LO signal") can be available to be routed to the LO receiver output ports 1-24 of the LO1 rack. The S4 switch determines where the LO signal is routed. The S4 switch can be in 5 different positions labeled numerically by an integer in the range 0 to 4. When the S4 switch is set to 0 (zero) there is no power on the LO signal and the S4 switch is in a "undefined" state. When the S4 switch is set to 1 the LO signal is sent to the LO receiver output ports 1-6 of the LO1 rack via the S5 switch. When the S4 switch is set to 2 the LO signal is sent to the LO receiver output ports 7-12 of the LO1 rack via the S6 switch. When the S4 switch is set to 3 the LO signal is sent to the LO receiver output ports 13-18 of the LO1 rack via the S7 switch. When the S4 switch is set to 1 the LO signal is terminated to ground.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s4 ≤ 4

Units: N/A

Example of Use: lo1.s4 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s5

Description: The S5 switch routes the LO signal output from the S4 switch to one of the LO receiver output ports (1-6) of the LO1 rack. The S5 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S5 switch is set to 0 (zero) there is no power on the LO signal and the S5 switch is in a "undefined" state. When the S5 switch is set to 1 the LO signal is sent to the LO receiver output port 1 of the LO1 rack. When the S5 switch is set to 2 the LO signal is sent to the LO receiver output port 2 of the LO1 rack. When the S5 switch is set to 3 the LO signal is sent to the LO receiver output port 3 of the LO1 rack. When the S5 switch is set to 4 the LO signal is sent to the LO receiver output port 4 of the LO1 rack. When the S5 switch is set to 5 the LO signal is sent to the LO receiver output port 5 of the LO1 rack. When the S5 switch is set to 6 the LO signal is sent to the LO receiver output port 6 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s5 ≤ 6

Units: N/A

Example of Use: lo1.s5 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s6

Description: The S6 switch routes the LO signal output from the S4 switch to one of the LO receiver output ports (7-12) of the LO1 rack. The S6 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S6 switch is set to 0 (zero) there is no power on the LO signal and the S6 switch is in a "undefined" state. When the S6 switch is set to 1 the LO signal is sent to the LO receiver output port 7 of the LO1 rack. When the S6 switch is set to 2 the LO signal is sent to the LO receiver output port 8 of the LO1 rack. When the S6 switch is set to 3 the LO signal is sent to the LO receiver output port 9 of the LO1 rack. When the S6 switch is set to 4 the LO signal is sent to the LO receiver output port 10 of the LO1 rack. When the S6 switch is set to 5 the LO signal is sent to the LO receiver output port 11 of the LO1 rack. When the S6 switch is set to 6 the LO signal is sent to the LO receiver output port 12 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s6 ≤ 6

Units: N/A

Example of Use: lo1.s6 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s7

Description: The S7 switch routes the LO signal output from the S4 switch to one of the LO receiver output ports (13-18) of the LO1 rack. The S7 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S7 switch is set to 0 (zero) there is no power on the LO signal and the S7 switch is in a "undefined" state. When the S7 switch is set to 1 the LO signal is sent to the LO receiver output port 13 of the LO1 rack. When the S7 switch is set to 2 the LO signal is sent to the LO receiver output port 14 of the LO1 rack. When the S7 switch is set to 3 the LO signal is sent to the LO receiver output port 15 of the LO1 rack. When the S7 switch is set to 4 the LO signal is sent to the LO receiver output port 16 of the LO1 rack. When the S7 switch is set to 5 the LO signal is sent to the LO receiver output port 17 of the LO1 rack. When the S7 switch is set to 6 the LO signal is sent to the LO receiver output port 18 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s7 ≤ 6

Units: N/A

Example of Use: lo1.s7 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s8

Description: Either of the LO1A or the LO1B generated LO signals (the "LO signal") can be available to be routed to the LO receiver output ports 19-24 of the LO1 rack. The S8 switch determines where the LO signal output from the S2 switch is routed. The S8 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S8 switch is set to 0 (zero) there is no power on the LO signal and the S8 switch is in a "undefined" state. When the S8 switch is set to 1 the LO signal is sent to the LO receiver output port 19 of the LO1 rack. When the S8 switch is set to 2 the LO signal is sent to the LO receiver output port 20 of the LO1 rack. When the S8 switch is set to 3 the LO signal is sent to the LO receiver output port 21 of the LO1 rack. When the S8 switch is set to 4 the LO signal is sent to the LO receiver output port 22 of the LO1 rack. When the S8 switch is set to 5 the LO signal is sent to the LO receiver output port 23 of the LO1 rack. When the S8 switch is set to 6 the LO signal is sent to the LO receiver output port 24 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s8 ≤ 6

Units: N/A

Example of Use: lo1.s8 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s9

Description: The S9 switch determines which synthesizer is used to generate the LO1A LO signal. The S9 switch can be in 3 different positions labeled numerically by an integer in the range 0 to 2. When the S9 switch is set to 0 (zero) there is no power on the LO1A LO signal (no synthesizer is selected) and the S9 switch is in a "undefined" state. When the S9 switch is set to 1 the LO signal is derived from the LO1A synthesizer. When the S9 switch is set to 2 the LO signal is derived from a second (user supplied?) synthesizer. Typically there will not be a synthesizer available other than the LO1A synthesizer.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s9 ≤ 2

Units: N/A

Example of Use: lo1.s9 = 1

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s10

Description: The S10 switch determines which synthesizer is used to generate the LO1A LO signal. The S10 switch can be in 3 different positions labeled numerically by an integer in the range 0 to 2. When the S10 switch is set to 0 (zero) there is no power on the LO1A LO signal (no synthesizer is selected) and the S10 switch is in a "undefined" state. When the S10 switch is set to 1 the LO signal is derived from the LO1A synthesizer. When the S10 switch is set to 2 the LO signal is derived from a second (user supplied?) synthesizer. Typically there will not be a synthesizer available other than the LO1A synthesizer.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s10 ≤ 2

Units: N/A

Example of Use: lo1.s10 = 1

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s11

Description: Either the output of the S3 switch (the "LO monitor signal") or the output of the Phase Cal generator can be used to provide a Test Tone for the receiver Test Tone output ports of the LO1 rack, via the S12, S13, S14 and S15 switches. The S11 switch determines whether the LO monitor signal or the Phase Cal signal is used as the Test Tone signal. When the S11 switch is in the "thru" state the LO monitor signal is terminated to ground and the Phase Cal signal is used for the Test Tone signal and is routed on to the S12 switch. When the S11 switch is in the "cross" state the Phase Cal signal is terminated to ground and the LO monitor signal is used for the Test Tone signal and is routed on to the S12 switch.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: "thru", "cross"

Units: N/A

Example of Use: lo1.s11 = "thru"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s12

Description: The S12 switch determines where the Test Tone signal is routed. The S12 switch can be in 5 different positions labeled numerically by an integer in the range 0 to 4. When the S12 switch is set to 0 (zero) there is no power on the Test Tone signal and the S12 switch is in a "undefined" state. When the S12 switch is set to 1 the Test Tone signal is terminated to ground. When the S12 switch is set to 2 the Test Tone signal is terminated to ground. When the S12 switch is set to 3 the Test Tone signal is routed to the Test Tone output ports 1-12 of the LO1 rack via the S14 and S15 switches. When the S12 switch is set to 4 the Test Tone signal is routed to the Test Tone output ports 13-18 of the LO1 rack via the S13 switch.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq \text{lo1.s12} \leq 4$

Units: N/A

Example of Use: lo1.s12 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s13

Description: The S13 switch routes the Test Tone signal output from the S12 switch to one of the Test Tone output ports (13-18) of the LO1 rack. The S13 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S13 switch is set to 0 (zero) there is no power on the Test Tone signal and the S13 switch is in a "undefined" state. When the S13 switch is set to 1 the Test Tone signal is sent to the Test Tone output port 13 of the LO1 rack. When the S13 switch is set to 2 the Test Tone signal is sent to the Test Tone output port 14 of the LO1 rack. When the S13 switch is set to 3 the Test Tone signal is sent to the Test Tone output port 15 of the LO1 rack. When the S13 switch is set to 4 the Test Tone signal is sent to the Test Tone output port 16 of the LO1 rack. When the S13 switch is set to 5 the Test Tone signal is sent to the Test Tone output port 17 of the LO1 rack. When the S13 switch is set to 6 the Test Tone signal is sent to the Test Tone output port 18 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s13 ≤ 6

Units: N/A

Example of Use: lo1.s13 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s14

Description: The S14 switch routes the Test Tone signal output from the S12 switch to one of the Test Tone output ports (1-6) of the LO1 rack. The S14 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S14 switch is set to 0 (zero) there is no power on the Test Tone signal and the S14 switch is in a "undefined" state. When the S14 switch is set to 1 the Test Tone signal is sent to the Test Tone output port 1 of the LO1 rack. When the S14 switch is set to 2 the Test Tone signal is sent to the Test Tone output port 2 of the LO1 rack. When the S14 switch is set to 3 the Test Tone signal is sent to the Test Tone output port 3 of the LO1 rack. When the S14 switch is set to 4 the Test Tone signal is sent to the Test Tone output port 4 of the LO1 rack. When the S14 switch is set to 5 the Test Tone signal is sent to the Test Tone output port 5 of the LO1 rack. When the S14 switch is set to 6 the Test Tone signal is sent to the Test Tone output port 6 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s14 ≤ 6

Units: N/A

Example of Use: lo1.s14 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s15

Description: The S15 switch routes the Test Tone signal output from the S12 switch to one of the Test Tone output ports (7-12) of the LO1 rack. The S15 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S15 switch is set to 0 (zero) there is no power on the Test Tone signal and the S15 switch is in a "undefined" state. When the S15 switch is set to 1 the Test Tone signal is sent to the Test Tone output port 7 of the LO1 rack. When the S15 switch is set to 2 the Test Tone signal is sent to the Test Tone output port 8 of the LO1 rack. When the S15 switch is set to 3 the Test Tone signal is sent to the Test Tone output port 9 of the LO1 rack. When the S15 switch is set to 4 the Test Tone signal is sent to the Test Tone output port 10 of the LO1 rack. When the S15 switch is set to 5 the Test Tone signal is sent to the Test Tone output port 11 of the LO1 rack. When the S15 switch is set to 6 the Test Tone signal is sent to the Test Tone output port 12 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s15 ≤ 6

Units: N/A

Example of Use: lo1.s15 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.subsystem_select

Description: The Subsystem Select parameters determines which of the LO1 subsystems are active to participate in scan sequence. The value for this parameter is a 4-element, boolean array with the elements corresponding, respectively, to the LO1A, LO1B, LO1Counter, and LO1Router.

GO Values: T, F

Max Size: 4

Units: N/A

Example of Use: lo1.subsystem_select = [T, T, T, F]

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.subsystem_state

Description: The Subsystem State is a read-only parameter that tells which of the LO1 subsystems are active to participate in scan sequence. The value for this parameter is a 4-element, string array with the elements corresponding, respectively, to the LO1A, LO1B, LO1Counter, and LO1Router.

GO Values: 'Off', 'Standby', 'Ready', 'Activating', 'Committed', 'Running', 'Stopping', 'Aborting', 'NotInService'

Max Size: 4

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.source_velocity

Description: The record containing the epoch and velocity, in units of km/s, which determines the sky frequency of the spectrometer passband. The Doppler correction equations are used to convert this velocity to frequency using the rest frame specified by the velocity definition and reference frame. The record can contain multiple epoch, velocity pairs. The record must be of length $n \times 7$ where n is an integer. The first four values in each sequence of seven values define the epoch at which the velocity is defined. The next three values in the sequence define the value of the velocity and its first and second derivatives at the specified epoch. The values in order are hours, minutes, seconds, MJD, velocity, acceleration (d(velocity)/dt) and jerk (d/dtd(velocity)/dt). This keyword should be used for situations where the source velocity changes during an integration.

GO Values: float

Max Size: ∞ but of size $n \times 7$

Units: hours, minutes, seconds, days, km/s, km/s/s, km/s/s/s

Example of Use: 1st example is for a single epoch and the 2nd example is for two epochs.
lo1.source_velocity = [1,1,1,51200,120,.001,.00005]
lo1.source_velocity = [1,1,1,51200,120,.001,.00005, 2,2,2,53432,-40.1,-0.002,-0.034]

YGOR parameter:

YGOR to GO mapping:

lo1.num_fsw_offsets

Description: The number of frequency switching offsets determines the size of the fsw_offsets array.T he number of frequency switching offsets must be larger than zero and less than 5. Changing the number of frequency offsets will change the fsw_offsets array and possibly the values of rest_freq_1 and rest_freq_2.

GO Values: integer

Allowed Range: $0 \leq$ lo1.num_fsw_offsets ≤ 4

Units: N/A

Example of Use: lo1.num_fsw_offsets = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.sideband_a

Description: The LO1A synthesizer sideband. Possible values are 'upper' or 'lower'. The sideband will be set by default when the effective receiver is selected using the following values: 0.290 - 0.395 GHz (lower), 0.385 - 0.520 GHz (lower), 0.510 - 0.690 GHz (lower), 0.680 - 0.920 GHz (lower), 0.910 - 1.230 GHz (lower), 1.15 - 1.73 GHz (lower), 1.73 - 2.60 GHz (lower), 3.95 - 5.85 GHz (lower), 8.0 - 10.1 GHz (lower), 12.0 - 15.4 GHz (upper), 18.0 - 22.4 GHz (upper), 22.0 - 26.5 GHz (upper), 40.0 - 50.0 GHz (upper).

GO Values: upper, lower

Units: N/A

Example of Use: lo1.sideband_a = "upper"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.sideband_b

Description: The LO1B synthesizer sideband. Possible values are 'upper' or 'lower'. The sideband will be set by default when the effective receiver is selected using the following values: 0.290 - 0.395 GHz (lower), 0.385 - 0.520 GHz (lower), 0.510 - 0.690 GHz (lower), 0.680 - 0.920 GHz (lower), 0.910 - 1.230 GHz (lower), 1.15 - 1.73 GHz (lower), 1.73 - 2.60 GHz (lower), 3.95 - 5.85 GHz (lower), 8.0 - 10.1 GHz (lower), 12.0 - 15.4 GHz (upper), 18.0 - 22.4 GHz (upper), 22.0 - 26.5 GHz (upper), 40.0 - 50.0 GHz (upper).

GO Values: upper, lower

Units: N/A

Example of Use: lo1.sideband_b = "upper"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.power_level_a

Description: The LO1A synthesizer output power level in dBm. This is typically set automatically using the auto_power_level parameter when a receiver is selected. Possible values range from -20 to +13.5dBm.

GO Values: float

Allowed Range: -20 $\leq$ lo1.power_level_a $\leq$ +13.5

Units: dBm

Example of Use: lo1.power_level_a = 2.5

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.power_level_b

Description: The LO1B synthesizer output power level in dBm. This is typically set automatically using the auto_power_level parameter when a receiver is selected. Possible values range from -20 to +13.5dBm.

GO Values: float

Allowed Range: -20 $\leq$ lo1.power_level_b $\leq$ +13.5

Units: dBm

Example of Use: lo1.power_level_b = 2.5

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.multiplier_a

Description: This parameter is the external LO frequency multiplier. Some receivers require that the internally generated LO1 frequency be doubled, etc. before reaching the requested LO frequency to be mixed with the receiver's sky frequency in order to produce the desired IF frequency. This parameter is used internally in the LO generation and should typically be ignored in the general LO equations.

This parameter is provided only for informational purposes.

GO Values: float

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.lo_offset_a

Description: This parameter is the external LO frequency offset term for LO equation in MHz. Some receivers require that the internally generated LO frequency be mixed with a fixed frequency from a crystal oscillator in order to produce the desired LO frequency. This parameter indicates how much the internal LO frequency has been shifted (offset) during this procedure.

This parameter is provided only for informational purposes.

GO Values: float

Units: MHz

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.lo_mode_a

Description: The operational mode LO1A. This mode can be either "tracking" or "testtone". In tracking mode the LO1A is being used to generate the LO signal for the receiver. In testtone mode is is either not being used or is being used to generate a test tone signal depending on the value of the lo_config parameter.

This parameter is provided only for informational purposes.

GO Values: "tracking","testtone"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.multiplier_b

Description: This parameter is the external LO frequency multiplier. Some receivers require that the internally generated LO1 frequency be doubled, etc. before reaching the requested LO frequency to be mixed with the receiver's sky frequency in order to produce the desired IF frequency. This parameter is used internally in the LO generation and should typically be ignored in the general LO equations.

This parameter is provided only for informational purposes.

GO Values: float

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.lo_offset_b

Description: This parameter is the external LO frequency offset term for LO equation in MHz. Some receivers require that the internally generated LO frequency be mixed with a fixed frequency from a crystal oscillator in order to produce the desired LO frequency. This parameter indicates how much the internal LO frequency has been shifted (offset) during this procedure.

This parameter is provided only for informational purposes.

GO Values: float

Units: MHz

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.lo_mode_b

Description: The operational mode LO1B. This mode can be either "tracking" or "testtone". In tracking mode the LO1B is being used to generate the LO signal for the receiver. In testtone mode is is either not being used or is being used to generate a test tone signal depending on the value of the lo_config parameter.

This parameter is provided only for informational purposes.

GO Values: "tracking","testtone"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.counter_band

Description: This parameter determines which band the frequency counter will use.

GO Values: “band 1”, “band 2”, “band 3”

Units: N/A

Example of Use: lo1.counter_band = “band 1”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.counter_resolution

Description: Resolution of the counter and by extension the sample rate.

GO Values: “1 Hz”, “10 Hz”, “100 Hz”, “1 kHz”, “10 kHz”

Units: N/A

Example of Use: lo1.counter_resolution = “10 Hz”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.phase_cal_ctrl

Description: Controls the operation of phase CAL for the LO1. CAL is short for calibration and corresponds to a series of “rails” injected into the system for calibration purposes. This is primarily used for VLBI observations.

GO Values: “On”, “Off”

Units: N/A

Example of Use: lo1.phase_cal_ctrl = ”external”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.phase_cal_mode

Description: The Phase Cal "rail" injection can occur with the rails spaced every 5 MHz or every 1 MHz. This parameter allows the selection of the rail spacing to be set.

GO Values: "1 MHz", "5 MHz"

Units: N/A

Example of Use: lo1.phase_cal_mode = "5 MHz"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s1

Description: A copy of the LO1A and LO1B synthesizer frequencies are available to be routed to the LO Counter or to the Test Tone outputs of the LO1 rack. One input signal (LO1A or LO1B generated) into the S1 switch is routed on to be available for the LO Counter or the Test Tone outputs (via the S3 switch) while the other input signal into the S1 switch is terminated to ground. When the S1 switch is in the "thru" position the LO1B generated signal is terminated to ground while the LO1A generated signal is routed on to the S3 switch. When the S1 switch is in the "cross" position the LO1A generated signal is terminated to ground while the LO1A generated signal is routed on to the S3 switch. The signal routed on to the S3 switch will be referred to as the "LO monitor signal".

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: "thru", "cross"

Units: N/A

Example of Use: lo1.s1 = "thru"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s2

Description: A copy of the LO1A and LO1B synthesizer frequencies are available to be routed to the receiver LO inputs. One input signal (LO1A or LO1B generated) into the S2 switch is routed on to be available to the LO receiver output ports 1-18 of the LO1 rack (via the S4 and S5, S6 & S7 switches) while the other input signal into the S2 switch is routed on to be available to the LO receiver output ports 19-24 of the LO1 rack (via the S8 switch). When the S2 switch is in the "thru" position the LO1A generated signal is routed on to the S4 switch while the LO1B generated signal is routed on to the S8 switch. When the S2 switch is in the "cross" position the LO1B generated signal is routed on to the S4 switch while the LO1A generated signal is routed on to the S8 switch. The signal routed on to the S4 switch will be referred to as the "LO signal".

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: "thru", "cross"

Units: N/A

Example of Use: lo1.s2 = "thru"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s3

Description: Either of the LO1A or the LO1B generated LO signals (the "LO monitor signal") can be available to be routed to the LO Counter or the Test Tone outputs of the LO1 rack. The S3 switch determines where the LO monitor signal is routed. The S3 switch can be in 5 different positions labeled numerically by an integer in the range 0 to 4. When the S3 switch is set to 0 (zero) there is no power on the LO monitor signal and the S3 switch is in a "undefined" state. When the S3 switch is set to 1 the LO monitor signal is sent to the High Resolution LO Counter. When the S3 switch is set to 2 the LO monitor signal is sent to the Low Resolution LO Counter. When the S3 switch is set to 3 the LO monitor signal is made available to the Test Tone outputs by routing the LO monitor signal to the S11 switch. When the S3 switch is set to 4 the LO monitor signal is terminated to ground.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $0 \leq \text{lo1.s3} \leq 4$

Units: N/A

Example of Use: lo1.s3 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s4

Description: Either of the LO1A or the LO1B generated LO signals (the "LO signal") can be available to be routed to the LO receiver output ports 1-24 of the LO1 rack. The S4 switch determines where the LO signal is routed. The S4 switch can be in 5 different positions labeled numerically by an integer in the range 0 to 4. When the S4 switch is set to 0 (zero) there is no power on the LO signal and the S4 switch is in a "undefined" state. When the S4 switch is set to 1 the LO signal is sent to the LO receiver output ports 1-6 of the LO1 rack via the S5 switch. When the S4 switch is set to 2 the LO signal is sent to the LO receiver output ports 7-12 of the LO1 rack via the S6 switch. When the S4 switch is set to 3 the LO signal is sent to the LO receiver output ports 13-18 of the LO1 rack via the S7 switch. When the S4 switch is set to 1 the LO signal is terminated to ground.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq \text{lo1.s4} \leq 4$

Units: N/A

Example of Use: lo1.s4 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s5

Description: The S5 switch routes the LO signal output from the S4 switch to one of the LO receiver output ports (1-6) of the LO1 rack. The S5 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S5 switch is set to 0 (zero) there is no power on the LO signal and the S5 switch is in a "undefined" state. When the S5 switch is set to 1 the LO signal is sent to the LO receiver output port 1 of the LO1 rack. When the S5 switch is set to 2 the LO signal is sent to the LO receiver output port 2 of the LO1 rack. When the S5 switch is set to 3 the LO signal is sent to the LO receiver output port 3 of the LO1 rack. When the S5 switch is set to 4 the LO signal is sent to the LO receiver output port 4 of the LO1 rack. When the S5 switch is set to 5 the LO signal is sent to the LO receiver output port 5 of the LO1 rack. When the S5 switch is set to 6 the LO signal is sent to the LO receiver output port 6 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq \text{lo1.s5} \leq 6$

Units: N/A

Example of Use: lo1.s5 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s6

Description: The S6 switch routes the LO signal output from the S4 switch to one of the LO receiver output ports (7-12) of the LO1 rack. The S6 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S6 switch is set to 0 (zero) there is no power on the LO signal and the S6 switch is in a "undefined" state. When the S6 switch is set to 1 the LO signal is sent to the LO receiver output port 7 of the LO1 rack. When the S6 switch is set to 2 the LO signal is sent to the LO receiver output port 8 of the LO1 rack. When the S6 switch is set to 3 the LO signal is sent to the LO receiver output port 9 of the LO1 rack. When the S6 switch is set to 4 the LO signal is sent to the LO receiver output port 10 of the LO1 rack. When the S6 switch is set to 5 the LO signal is sent to the LO receiver output port 11 of the LO1 rack. When the S6 switch is set to 6 the LO signal is sent to the LO receiver output port 12 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s6 ≤ 6

Units: N/A

Example of Use: lo1.s6 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s7

Description: The S7 switch routes the LO signal output from the S4 switch to one of the LO receiver output ports (13-18) of the LO1 rack. The S7 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S7 switch is set to 0 (zero) there is no power on the LO signal and the S7 switch is in a "undefined" state. When the S7 switch is set to 1 the LO signal is sent to the LO receiver output port 13 of the LO1 rack. When the S7 switch is set to 2 the LO signal is sent to the LO receiver output port 14 of the LO1 rack. When the S7 switch is set to 3 the LO signal is sent to the LO receiver output port 15 of the LO1 rack. When the S7 switch is set to 4 the LO signal is sent to the LO receiver output port 16 of the LO1 rack. When the S7 switch is set to 5 the LO signal is sent to the LO receiver output port 17 of the LO1 rack. When the S7 switch is set to 6 the LO signal is sent to the LO receiver output port 18 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s7 ≤ 6

Units: N/A

Example of Use: lo1.s7 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s8

Description: Either of the LO1A or the LO1B generated LO signals (the "LO signal") can be available to be routed to the LO receiver output ports 19-24 of the LO1 rack. The S8 switch determines where the LO signal output from the S2 switch is routed. The S8 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S8 switch is set to 0 (zero) there is no power on the LO signal and the S8 switch is in a "undefined" state. When the S8 switch is set to 1 the LO signal is sent to the LO receiver output port 19 of the LO1 rack. When the S8 switch is set to 2 the LO signal is sent to the LO receiver output port 20 of the LO1 rack. When the S8 switch is set to 3 the LO signal is sent to the LO receiver output port 21 of the LO1 rack. When the S8 switch is set to 4 the LO signal is sent to the LO receiver output port 22 of the LO1 rack. When the S8 switch is set to 5 the LO signal is sent to the LO receiver output port 23 of the LO1 rack. When the S8 switch is set to 6 the LO signal is sent to the LO receiver output port 24 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s8 ≤ 6

Units: N/A

Example of Use: lo1.s8 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s9

Description: The S9 switch determines which synthesizer is used to generate the LO1A LO signal. The S9 switch can be in 3 different positions labeled numerically by an integer in the range 0 to 2. When the S9 switch is set to 0 (zero) there is no power on the LO1A LO signal (no synthesizer is selected) and the S9 switch is in a "undefined" state. When the S9 switch is set to 1 the LO signal is derived from the LO1A synthesizer. When the S9 switch is set to 2 the LO signal is derived from a second (user supplied?) synthesizer. Typically there will not be a synthesizer available other than the LO1A synthesizer.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s9 ≤ 2

Units: N/A

Example of Use: lo1.s9 = 1

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s10

Description: The S10 switch determines which synthesizer is used to generate the LO1A LO signal. The S10 switch can be in 3 different positions labeled numerically by an integer in the range 0 to 2. When the S10 switch is set to 0 (zero) there is no power on the LO1A LO signal (no synthesizer is selected) and the S10 switch is in a "undefined" state. When the S10 switch is set to 1 the LO signal is derived from the LO1A synthesizer. When the S10 switch is set to 2 the LO signal is derived from a second (user supplied?) synthesizer. Typically there will not be a synthesizer available other than the LO1A synthesizer.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq \text{lo1.s10} \leq 2$

Units: N/A

Example of Use: lo1.s10 = 1

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s11

Description: Either the output of the S3 switch (the "LO monitor signal") or the output of the Phase Cal generator can be used to provide a Test Tone for the receiver Test Tone output ports of the LO1 rack, via the S12, S13, S14 and S15 switches. The S11 switch determines whether the LO monitor signal or the Phase Cal signal is used as the Test Tone signal. When the S11 switch is in the "thru" state the LO monitor signal is terminated to ground and the Phase Cal signal is used for the Test Tone signal and is routed on to the S12 switch. When the S11 switch is in the "cross" state the Phase Cal signal is terminated to ground and the LO monitor signal is used for the Test Tone signal and is routed on to the S12 switch.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: "thru", "cross"

Units: N/A

Example of Use: lo1.s11 = "thru"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.s12

Description: The S12 switch determines where the Test Tone signal is routed. The S12 switch can be in 5 different positions labeled numerically by an integer in the range 0 to 4. When the S12 switch is set to 0 (zero) there is no power on the Test Tone signal and the S12 switch is in a "undefined" state. When the S12 switch is set to 1 the Test Tone signal is terminated to ground. When the S12 switch is set to 2 the Test Tone signal is terminated to ground. When the S12 switch is set to 3 the Test Tone signal is routed to the Test Tone output ports 1-12 of the LO1 rack via the S14 and S15 switches. When the S12 switch is set to 4 the Test Tone signal is routed to the Test Tone output ports 13-18 of the LO1 rack via the S13 switch.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s12 ≤ 4

Units: N/A

Example of Use: lo1.s12 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s13

Description: The S13 switch routes the Test Tone signal output from the S12 switch to one of the Test Tone output ports (13-18) of the LO1 rack. The S13 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S13 switch is set to 0 (zero) there is no power on the Test Tone signal and the S13 switch is in a "undefined" state. When the S13 switch is set to 1 the Test Tone signal is sent to the Test Tone output port 13 of the LO1 rack. When the S13 switch is set to 2 the Test Tone signal is sent to the Test Tone output port 14 of the LO1 rack. When the S13 switch is set to 3 the Test Tone signal is sent to the Test Tone output port 15 of the LO1 rack. When the S13 switch is set to 4 the Test Tone signal is sent to the Test Tone output port 16 of the LO1 rack. When the S13 switch is set to 5 the Test Tone signal is sent to the Test Tone output port 17 of the LO1 rack. When the S13 switch is set to 6 the Test Tone signal is sent to the Test Tone output port 18 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s13 ≤ 6

Units: N/A

Example of Use: lo1.s13 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s14

Description: The S14 switch routes the Test Tone signal output from the S12 switch to one of the Test Tone output ports (1-6) of the LO1 rack. The S14 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S14 switch is set to 0 (zero) there is no power on the Test Tone signal and the S14 switch is in a "undefined" state. When the S14 switch is set to 1 the Test Tone signal is sent to the Test Tone output port 1 of the LO1 rack. When the S14 switch is set to 2 the Test Tone signal is sent to the Test Tone output port 2 of the LO1 rack. When the S14 switch is set to 3 the Test Tone signal is sent to the Test Tone output port 3 of the LO1 rack. When the S14 switch is set to 4 the Test Tone signal is sent to the Test Tone output port 4 of the LO1 rack. When the S14 switch is set to 5 the Test Tone signal is sent to the Test Tone output port 5 of the LO1 rack. When the S14 switch is set to 6 the Test Tone signal is sent to the Test Tone output port 6 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s14 ≤ 6

Units: N/A

Example of Use: lo1.s14 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.s15

Description: The S15 switch routes the Test Tone signal output from the S12 switch to one of the Test Tone output ports (7-12) of the LO1 rack. The S15 switch can be in 7 different positions labeled numerically by an integer in the range 0 to 6. When the S15 switch is set to 0 (zero) there is no power on the Test Tone signal and the S15 switch is in a "undefined" state. When the S15 switch is set to 1 the Test Tone signal is sent to the Test Tone output port 7 of the LO1 rack. When the S15 switch is set to 2 the Test Tone signal is sent to the Test Tone output port 8 of the LO1 rack. When the S15 switch is set to 3 the Test Tone signal is sent to the Test Tone output port 9 of the LO1 rack. When the S15 switch is set to 4 the Test Tone signal is sent to the Test Tone output port 10 of the LO1 rack. When the S15 switch is set to 5 the Test Tone signal is sent to the Test Tone output port 11 of the LO1 rack. When the S15 switch is set to 6 the Test Tone signal is sent to the Test Tone output port 12 of the LO1 rack.

One should consult the "cabling file" to determine how signals propagate between devices from a given output port to a given input port.

GO Values: integer

Allowed Range: $1 \leq$ lo1.s15 ≤ 6

Units: N/A

Example of Use: lo1.s15 = 2

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

lo1.scan_number

Description: The scan number of the current scan if a scan is being executed, or the scan number of the last completed scan. This value is a read-only parameter. To change the scan number the next_scan_number keyword should be used.

GO Values: integer

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.next_scan_number

Description: The Scan Number normally updates at the beginning of each scan, but it may be set to a new value by setting the next_scan_number parameter value. If the Scan Coordinator manager is present this value actually sets the sc.next_scan_number value. The lo1.next_scan_number value is set only when the LO1 is being run in stand-alone mode.

GO Values: integer

Units: N/A

Example of Use: lo1.next_scan_number = 99

YGOR parameter:

YGOR to GO mapping:

lo1.project_id

Description: The Project ID is the "number" assigned to your program on the telescope schedule, e.g., GBT01A-011. This string is used as a directory name for your data, e.g. /home/gbtdata/GBT01A-011. If the Scan Coordinator manager is present this value actually sets the sc.project_id value. The lo1.project_id value is set only when the LO1 is being run in stand-alone mode.

GO Values: N/A

Units: N/A

Example of Use: lo1.project_id = "GBT01A-011"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.source_name

Description: Any Source Name less than 32 characters. In pulsar observing this name is used to fetch the current pulsar timing parameters and must be in a standard 'hhmmsdd' format, e.g., 0329+54, and must match the name in the polyco.dat file. In other observing modes the Source Name is only an identifier label. If the Scan Coordinator manager is present this value actually sets the sc.source_name value. The lo1.source_name value is set only when the LO1 is being run in stand-alone mode.

GO Values: N/A

Units: N/A

Example of Use: lo1.source_name = "3C84"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.scan_id

Description: The Scan I.D. is a supplement to the Source Name for labeling the data. It has no effect on the data taking process. The string must be less than 32 characters. If the Scan Coordinator manager is present this value actually sets the sc.scan_id value. The lo1.scan_id value is set only when the LO1 is being run in stand-alone mode.

GO Values: N/A

Units: N/A

Example of Use: lo1.scan_id = "3C84 pointing scan"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.scan_length

Description: The Scan Length is the duration of the scan in seconds. Any data integrations completed after the end of a scan will normally be discarded. Hence, the Scan Length is typically an integer number of integration times plus a second or two. If the Scan Coordinator manager is present this value actually sets the sc.scan_length value. The lo1.scan_length value is set only when the LO1 is being run in stand-alone mode.

GO Values: float

Units: seconds

Example of Use: lo1.scan_length = 600.3

YGOR parameter:

YGOR to GO mapping:

lo1.start_time

Description: The default for starting a scan is to simply start as soon as possible, in which case you should not specify a start time. Start times for procedures must be set with one of the procedure keywords start_utc or start_lst. This LO1 start_time is a lower level parameter for direct control of the LO1 or the scan coordinator. If the Scan Coordinator manager is present this value actually sets the sc.start_time value. The lo1.start_time value is set only when the LO1 is being run in stand-alone mode. UTC is assumed for this parameter.

This keyword can be set directly with the set_sc_parameter() GO glish function using the TimeStamp() glish conversion function:

set_sc_parameter('start_time', TimeStamp(hh, mm, ss, MJD))

where hh:mm:ss is the UTC time, and MJD is the Modified Julian Date. Two routines are provided for the convenience of setting the start_time using the current MJD or by specifying the Local Sidereal Time:

set_sc_start_utc('11:45:36.343') set_sc_start_lst('02:44:18')

An LST will be converted to UTC, and the time will be assumed to be in the day between the current time minus 30 minutes and plus 23 hours 30 minutes. Note the time format and the fact that they are specified as strings. When you execute the procedure

x := get_sc_parameter('start_time');

the value returned is a glish record containing the Modified Julian Date and the UTC in seconds since the beginning of the day, e.g., [seconds=61714, MJD=51821, flags=0, refFrame=1, units=1].

Units: "[seconds of day, Modified Julian Day Number]"

Example of Use: lo1.start_time = "[seconds=11987, MJD=52345]"

YGOR parameter:

YGOR to GO mapping:

lo1.stop_time

Description: The default for starting a scan is to simply start as soon as possible, in which case you should not specify a start time. If you want to specify a stop time for the 'track' procedure you must use one of the procedure keywords stop_utc or stop_lst. This scan coordinator stop_time is a lower level parameter for direct control of the scan coordinator. If the Scan Coordinator manager is present this value actually sets the sc.stop_time value. The lo1.stop_time value is set only when the LO1 is being run in stand-alone mode. UTC is assumed for this parameter.

This keyword can be set directly with the set_sc_parameter() function using the TimeStamp() conversion:

set_sc_parameter('stop_time', TimeStamp(hh, mm, ss.s, MJD))

where hh:mm:ss.s is the UTC time, and MJD is the Modified Julian Date. Two routines are provided for the convenience of setting the stop_time using the current MJD or by specifying the Local Sidereal Time:

set_sc_stop_utc('11:45:36.343') set_sc_stop_lst('02:44:18')

An LST will be converted to UTC, and the time will be assumed to be in the day between the current time minus 30 minutes and plus 23 hours 30 minutes. Note the time format and the fact that it is specified as a string. When you execute the procedure

x := get_sc_parameter('stop_time');

the value returned is a glish record containing the Modified Julian Date and the UTC in seconds since the beginning of the day, e.g., [seconds=61714, MJD=51821, flags=0, refFrame=1, units=1].

Units: "[seconds of day, Modified Julian Day Number]"

Example of Use: lo1.stop_time = "[seconds=59306, MJD=52368]"

YGOR parameter:

YGOR to GO mapping:

lo1.actual_start_time

Description: The Actual Start Time is a read only parameter whose value is the UTC time and date of the when the current or last scan actually started.

Units: HH:MM:SS.S

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.state

Description: The State is a read-only parameter that shows the current state of the LO1. The state between scans is normally Ready. The scan sequence of State is Activating, Committed, Running, and Stopping in that order. If the State shows Off or Standby, the LO1 may be put into the ready state with the 'lo1.on()' glish command or by using the Scan Coordinator GUI to active the LO1. Normally the LO1 will be Ready when using this panel. When the LO1 is run in stand-alone mode, a scan may be started by pressing the Start button and stopped before its normal termination by pressing the same button which will be labeled Stop while the scan is running. Setup parameters may be changed only in the Ready state.

GO Values: "Ready", "Activating", "Committed", "Running", "Stopping"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.status

Description: The Status is a read-only parameter that tells the currently highest warning or fault level for the LO1. The possible values are clear, Info, Notice, Warning, Error, Fault, and Fatal. One of the last three conditions can prevent the scan sequence from proceeding.

GO Values: "clear", "Info", "Notice", "Warning", "Error", "Fault", "Fatal"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.primary_segments

Description: Primary Segments specify the position of the telescope beam on the sky in the selected Coordinate Mode during a scan. Each segment consists of a position and first and second position time derivatives in each of two coordinates, e.g. RA and Dec, and a segment duration. Time is in seconds for the duration and the derivatives. There can be any number of segments, but only the first one is displayed here. One segment is usually enough for most observations, in which case the duration should be equal to the scan length. If the total time given by the Primary Segments is greater than the scan length, some of the last segments may be ignored or truncated. If the total segment time is less than the scan length, the last segment will be extrapolated. The time field displayed is the segment duration.

This parameter is read-only for informative purposes in the LO1.

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.primary_offsets

Description: Primary Offsets specify telescope beam position offsets during a scan from the positions given by the Primary Segments in the selected Coordinate Mode during a scan. Each segment consists of a position and first and second position time derivatives in each of two coordinates, e.g. RA and Dec, and a segment duration. Time is in seconds for the duration and the derivatives. There can be any number of segments, but only the first one is displayed here. If the total time given primary offsets is greater than the scan length, some of the last segments may be ignored or truncated. If the total segment time is less than the scan length, the last segment will be extrapolated. The time field displayed is the segment duration.

This parameter is read-only for informative purposes in the LO1.

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.primary_units

Description: The Primary Units parameter specifies the units used by the Primary Segments and Primary Offsets. The choices are Hrs/Deg, Deg/Deg, and Rad/Rad. Hrs/Deg normally only applies to RA/Dec and HA/Dec but can be applied to other coordinates.

This parameter is read-only for informative purposes in the LO1.

GO Values: “Degrees_Degrees”, “Hours_Degrees”, “Radians_Radians”

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.user_transform

Description: The User Transform specifies a user-defined spherical coordinate system with a three-axis coordinate rotation from the selected coordinate system, e.g. J2000, AzEl, etc. The rotations may be made time dependent, for tracking solar system objects, by specifying first and second derivatives for each rotation component. Also, any number rotation segments may be concatenated, if one parabolic track is not sufficient. The coordinate rotation "track" is independent of scan times and durations, but the segments must span the time of any scans that use the UserDefined Coordinate Mode. The time fields refer to the MJD and UTC, in seconds, for the beginning of the segment. The three coordinate rotations are around the Z, X, and Z axes, in that order. The Z axis is through the positive pole (except for the left-handed AzEl system where it is through the nadir); the X axis is through longitude = latitude = 0; and the Y axis is through longitude = 90 degrees, latitude = 0. The rotations are specified in units determined by the "primary_units" parameter with time in seconds for the velocity and acceleration.

This parameter is read-only for informative purposes in the LO1.

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.user_transform_enable

Description: User Transform Enable determines whether a coordinate rotation, as defined by the User Transform and User Transform Order, is to be done in the selected Coordinate Mode spherical coordinates. This allows you to define a new coordinate origin and pole. For example, you could set the "equinox" of our coordinates on an object to be mapped and rotate the "equator" to align with the objects major axis. The user transform is employed to track a solar system object, but the parameters for keeping the origin on the object are computed automatically. To set up a new origin from the GUI panels, select "User Transform" with the "Other Panels" button in the Antenna Setup panel. The full user transform parameter is a glish record with as many segments as are required to track a moving object. To set a fixed origin redefinition use the New Origin parameters in the procedures group.

This parameter is read-only for informative purposes in the LO1.

GO Values: T, F

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.user_transform_order

Description: The User Transform Order parameter allows the user to invoke any spherical coordinate rotation from a user defined system to the currently selected coordinate mode. The rotation axes are defined as a right-hand coordinate system, where Z is toward the current pole, and X is toward the zero point on the current equator. For example, you can define a new origin and equator orientation at a J2000 Ra/Dec point with an XYZ rotation order. The X rotation orients the new equator parallel to the J2000 equator, the Y rotation moves the new equator onto the J2000 equator, and the Z rotation moves the new equinox to the J2000 equinox. The rotation order choices are XYX, XYZ, XZX, XZY, YXY, YXZ, YZX, YZY, ZXY, ZXZ, ZYX, and ZYZ.

This parameter is read-only for informative purposes in the LO1.

GO Values: "XYX", "XYZ", "XZX", "XZY", "YXY", "YXZ", "YZX", "YZY", "ZXY", "ZXZ", "ZYX", "ZYZ"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.cos_v_mode

Description: The Cosine Minor parameter controls whether position offsets in the major coordinate (RA, Azimuth, or Longitude) are multiplied by the secant of the minor coordinate (Dec, Elevation, or Latitude). The choices are ON and OFF.

This parameter is read-only for informative purposes in the LO1.

GO Values: T, F

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.coordinate_mode

Description: The Coordinate Mode defines the coordinate system in which the direction of the telescope beam is specified. This coordinate system applies to the Primary Segment and Primary Offset parameters and the coordinate system into which the User Transform coordinates are rotated. The available Coordinate Modes are J2000, B1950, RaDecofDate, ApparentRaDec, Galactic, HaDec, and AzEl.

This parameter is read-only for informative purposes in the LO1.

GO Values: "J2000", "B1950", "RaDecofDate", "ApparentRaDec", "Galactic", "HaDec", "AzEl"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.offset_coordinate_mode

Description: The Offset Coordinate Mode defines the coordinate system in which the direction of the telescope motion is specified. This coordinate system applies to the Primary Offset parameters. The available Offset Coodinate Modes are J2000, B1950, RaDecofDate, ApparentRaDec, Galactic, HaDec, and AzEl.

This parameter is read-only for informative purposes in the LO1.

GO Values: "J2000", "B1950", "RaDecofDate", "ApparentRaDec", "Galactic", "HaDec", "AzEl"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.epoch

Description: This parameter is the epoch of the coordinateMode. Active only when coordinateMode is set to RaDecOfDate. Otherwise this value provides feedback.

This parameter is read-only for informative purposes in the LO1.

GO Values: float

Units: Years

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

lo1.number_of_phases

Description: The Number of Phases specifies how many phases are in the switching cycle. This number is predetermined by the selected Switching Mode for all but the "User Defined" modes. In that mode the number may be between 1 and 64. If the Scan Coordinator manager is present this value actually sets the sc.number_of_phases value. The lo1.number_of_phases value is set only when the LO1 is being run in stand-alone mode.

GO Values: integer

Max Size: 64

Units: N/A

Example of Use: lo1.number_of_phases = 8

YGOR parameter:

YGOR to GO mapping:

lo1.blanking_time

Description: Blanking Time is the time in seconds at the beginning of each switch phase when data integration is inhibited. The Blanking Time may be set to a different value for each phase through the glish command line, but one value is usually sufficient for every phase, and that value is specified here. The resolution in 100nS. If the Scan Coordinator manager is present this value actually sets the sc.blanking_time value. The lo1.blanking_time value is set only when the LO1 is being run in stand-alone mode.

GO Values: float

Max Size: 64

Units: N/A

Example of Use: lo1.blanking_time = 0.02

YGOR parameter:

YGOR to GO mapping:

lo1.phase_start

Description: Each Phase Start entry field specifies the beginning of this phase as a fraction of the total switch cycle. The first start time must be zero, they must increase monotonically, and the last phase start time must be less than one. The effective integration time for a phase in one switching cycle is the product of the Switch Period and the difference between that phase's and the next phase's start times minus the Blanking Time. The number of phases depends on the selected Switching Mode or on the number of phases selected by the user in the "User Defined" modes. In all but the "User Defined" modes the phase Start times are predetermined by the selected mode. If the Scan Coordinator manager is present this value actually sets the sc.phase_start value. The lo1.phase_start value is set only when the LO1 is being run in stand-alone mode.

GO Values: float

Max Size: 64

Units: N/A

Example of Use: lo1.phase_start = [0.0, 0.25, 0.50, 0.75]

YGOR parameter:

YGOR to GO mapping:

lo1.cal_state

Description: Each Actual Cal button specifies the state of the receiver calibration signal in the button's switching phase used in the LO1. If the Scan Coordinator manager is present this value actually sets the sc.cal_state value. The lo1.cal_state value is set only when the LO1 is being run in stand-alone mode.

GO Values: "ON", "OFF"

Max Size: 64

Units: N/A

Example of Use: lo1.cal_state = ["ON", "OFF","ON", "OFF"]

YGOR parameter:

YGOR to GO mapping:

lo1.sig_ref_state

Description: Each SigRef toggle button specifies the state of the receiver frequency/load/beam switch signal in the button's switching phase. The number of phases depends on the selected Switching Mode or on the number of phases selected by the user in the "User Defined" mode. In all but the "User Defined" mode the SigRef states are predetermined by the selected mode. If the Scan Coordinator manager is present this value actually sets the sc.sig_ref_state value. The lo1.sig_ref_state value is set only when the LO1 is being run in stand-alone mode.

GO Values: "Sig", "Ref"

Max Size: 64

Units: N/A

Example of Use: lo1.sig_ref_state = ["Sig", "Sig", "Ref", "Ref"]

YGOR parameter:

YGOR to GO mapping:

lo1.switch_period

Description: The Switch Period specifies the time in seconds of a full switch cycle. The Integration Time must be an integer number of Switch Periods and will be changed to the nearest value when a new Switch Period is entered. If the Scan Coordinator manager is present this value actually sets the sc.switch_period value. The lo1.switch_period value is set only when the LO1 is being run in stand-alone mode.

GO Values: float

Units: seconds

Example of Use: lo1.switch_period = 2.0

YGOR parameter:

YGOR to GO mapping:

lo1.switching_signals_master

Description: The Switching Signals Master selects which backend provides the switching signals to all of the backends. If the Scan Coordinator manager is present this value actually sets the sc.switching_signals_master value. The lo1.switching_signals_master value is set only when the LO1 is being run in stand-alone mode.

GO Values: "SpectralProcessor", "DCR", "Spectrometer"

Units: N/A

Example of Use: lo1.switching_signals_master = "DCR"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

lo1.receiver

Description: The receiver identifies the "effective front-end" being used for the observations. This allows some control of switching signals during doppler tracking to be automatically setup. It also allows some of the IF chain to be automatically setup. If the Scan Coordinator manager is present this value actually sets the sc.receiver value. The lo1.receiver value is set only when the LO1 is being run in stand-alone mode.

GO Values: "NoiseSource", "Rcvr_342", "Rcvr_450", "Rcvr_600", "Rcvr_800", "Rcvr_1070", "Rcvr1_2", "Rcvr2_3", "Rcvr4_6", "Rcvr8_10", "Rcvr12_18", "Rcvr18_22", "Rcvr22_26", "Rcvr40_52"

Units: N/A

Example of Use: lo1.receiver = "Rcvr1_2"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

4.4.2 Converter Rack

Implemented but not yet documented.

4.4.3 IF Rack

Not yet implemented.

4.4.4 Analog Filter Rack

Not yet implemented.

4.5 Front Ends

4.5.1 rx Keyword Prefix

4.5.2 Prime Focus 1 Receiver

Not yet implemented.

4.5.3 Prime Focus 2 Receiver

Not yet implemented.

4.5.4 1 To 2 GHz (21 cm) Receiver

Not yet implemented.

4.5.5 2 To 3 GHz (11 cm) Receiver

Not yet implemented.

4.5.6 4 To 6 GHz (6 cm) Receiver

Not yet implemented.

4.5.7 8 To 10 GHz (3 cm) Receiver

Not yet implemented.

4.5.8 12 To 18 GHz (2 cm) Receiver

Not yet implemented.

4.5.9 18 To 26 GHz (1 cm) Receiver

- rx18to26.cal_rcp
- rx18to26.cal_lcp
- rx18to26.cal_rcp_power
- rx18to26.cal_lcp_power
- rx18to26.cal_ctrl
- rx18to26.rcp12
- rx18to26.lcp12
- rx18to26.rcp34
- rx18to26.lpc34
- rx18to26.beam_ctrl

rx18to26.cal_rcp

Description: Controls the state of the CAL RCP switch. The switch can be either “on” or “off”. Note that this keyword is only used if cal_ctrl is set to “manual”.

GO Values: on, off

Units: N/A

Example of Use: rx18to26.cal_rcp = ”off”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cal_lcp

Description: Controls the state of the CAL LCP switch. The switch can be either “on” or “off”. Note that this keyword is only used if cal_ctrl is set to “manual”

GO Values: on, off

Units: N/A

Example of Use: rx18to26.cal_lcp = ”off”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cal_rcp_power

Description: Power control for the RCP CAL for the 1 cm (18-26 GHz) receiver. The power supply can be either “on” or “off”.

GO Values: on, off

Units: N/A

Example of Use: rx18to26.cal_rcp_power = ”off”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cal_lcp_power

Description: Power control for the LCP CAL for the 1 cm (18-26 GHz) receiver. The power supply can be either “on” or “off”.

GO Values: on, off

Units: N/A

Example of Use: rx18to26.cal_lcp_power = ”off”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cal_ctrl

Description: Controls the operation of CAL switches for both LCP and RCP for the 1 cm (18-26 GHz) receiver. CAL is short for calibration and corresponds to noise injected into the system for calibration purposes. These switches can be set either manually or be under external control as defined by cal_ctrl.

GO Values: manual, external

Units: N/A

Example of Use: rx18to26.cal_ctrl = ”external”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.rcp12

Description: Controls the state of the RCP switch for the 18-22 GHz section of the 1 cm receiver between feeds 1 and 2. The switch can either be through or crossed. Note that this keyword is only used if beam_ctrl is set to “manual”.

GO Values: thru, cross

Units: N/A

Example of Use: rx18to26.rcp12 = ”thru”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.lcp12

Description: Controls the state of the LCP switch for the 18-22 GHz section of the 1 cm receiver between feeds 1 and 2. The switch can either be through or crossed. Note that this keyword is only used if beam_ctrl is set to “manual”.

GO Values: thru, cross

Units: N/A

Example of Use: rx18to26.lcp12 = ”thru”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.rcp34

Description: Controls the state of the RCP switch for the 22-26 GHz section of the 1 cm receiver between feeds 3 and 4. The switch can either be through or crossed. Note that this keyword is only used if beam_ctrl is set to “manual”.

GO Values: thru, cross

Units: N/A

Example of Use: rx18to26.rcp34 = ”thru”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.lpc34

Description: Controls the state of the LCP switch for the 22-26 GHz section of the 1 cm receiver between feeds 3 and 4. The switch can either be through or crossed. Note that this keyword is only used if Kbeam_ctrl is set to “manual”.

GO Values: thru, cross

Units: N/A

Example of Use: rx18to26.lpc34 = ”thru”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.beam_ctrl

Description: Controls the operation of all four beam switches for the 1 cm (18-26 GHz) receiver. These switches can either be set manually or be under external control as defined by beam_ctrl. This receiver consists of four separate dual-polarization feeds. Feeds 1 and 2 can be tuned between 18-22 GHz while feeds 3 and 4 can be tuned between 22-26 GHz. There are a total of four beam switches corresponding to switching between the LCP and RCP signals of the two 22-18 GHz feeds and between the LCP abd RCP signals of the two 22-26 GHz feeds. The switches are called rcp12, lcp12, rcp34, and lcp34. beam_ctrl, which simultaneously controls all four switches, can be in either manual or external control.

GO Values: manual, external

Units: N/A

Example of Use: rx18to26.beam_ctrl = ”external”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cryo_state

Description: This parameter controls the state of the cryogenic system for the 1 cm receiver. The cryogenics can be in one of four states: "Off", "Heat", "Cool", and "Pump". When in the "Off" state there is no power to the the refrigerator, heater and vacuum pump. In the "Heat" state the 1 cm receiver dewar is being intentionally warmed up with 33 watts of power being sent to the heater. In the "Cool" state the dewar for the 1 cm receiver is either being cooled down or is in the normal state for routine observations. In the "Pump" state there is now no power to the refrigerator or the heater, but the vacuum pump is "ruff pumping" the dewar. Typically the cryo_state is "hard-wired" and is not under software control.

GO Values: "Off", "Heat", "Cool", "Pump"

Units: N/A

Example of Use: rx18to26.cryo_state = "Off"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.rcp1_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 1st feed horn RCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.rcp1_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.rcp2_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 2nd feed horn RCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.rcp2_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.rcp3_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 3rd feed horn RCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.rcp3_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.rcp4_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 4th feed horn RCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.rcp4_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.lcp1_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 1st feed horn LCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.lcp1_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.lcp2_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 2nd feed horn LCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.lcp2_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.lcp3_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 3rd feed horn LCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.lcp3_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.lcp4_amp_power

Description: This parameter turns the power on or off for the first amplifier of the 4th feed horn LCP in the 1 cm receiver.

GO Values: "ON", "OFF"

Units: N/A

Example of Use: rx18to26.lcp4_amp_power = "ON"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.rcp1_amp_gain

Description: This parameter sets the gain of the first amplifier of the 1st feed horn RCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.rcp1_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.rcp1_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.rcp2_amp_gain

Description: This parameter sets the gain of the first amplifier of the 2nd feed horn RCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.rcp2_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.rcp2_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.rcp3_amp_gain

Description: This parameter sets the gain of the first amplifier of the 3rd feed horn RCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.rcp3_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.rcp3_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.rcp4_amp_gain

Description: This parameter sets the gain of the first amplifier of the 4th feed horn RCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.rcp4_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.rcp4_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.lcp1_amp_gain

Description: This parameter sets the gain of the first amplifier of the 1st feed horn LCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.lcp1_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.lcp1_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.lcp2_amp_gain

Description: This parameter sets the gain of the first amplifier of the 2nd feed horn LCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.lcp2_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.lcp2_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.lcp3_amp_gain

Description: This parameter sets the gain of the first amplifier of the 3rd feed horn LCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.lcp3_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.lcp3_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.lcp4_amp_gain

Description: This parameter sets the gain of the first amplifier of the 4th feed horn LCP in the 1 cm receiver.

GO Values: float

Allowed Range: -10 $\leq$ rx18to26.lcp4_amp_gain $\leq$ 10

Units: N/A

Example of Use: rx18to26.lcp4_amp_power = 5.0

YGOR parameter:

YGOR allowed range:

YGOR to GO mapping:

rx18to26.cryo_monitor_rate

Description: The cryo_monitor_rate parameter controls how often the cryogenics monitor values are sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.cryo_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cryo_status_monitor_rate

Description: The cryo_status_monitor_rate parameter controls how often the cryogenics status monitor value is sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.cryo_status_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cryo_control_monitor_rate

Description: The cryo_control_monitor_rate parameter controls how often the cryogenics control monitor value is sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.cryo_control_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.switch_status_monitor_rate

Description: The switch_status_monitor_rate parameter controls how often the Cal. power and External Cal. signal values are sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.switch_status_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.noise_source_monitor_rate

Description: The noise_source_monitor_rate parameter controls how often the Cal signal volt and current monitor values are sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.noise_source_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.gregorian_monitor_rate

Description: The gregorian_monitor_rate parameter controls how often the dewar temperatures, the vacuums levels, the amplifier power levels and the beam_control state values are sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.gregorian_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.supply_monitor_rate

Description: The supply_monitor_rate parameter controls how often the power supply voltage level values are sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.supply_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.cryo_amp_monitor_rate

Description: The cryo_amp_monitor_rate parameter controls how often the 1st stage amplifier level values are sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.cryo_amp_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.bias_switch_monitor_rate

Description: The bias_switch_monitor_rate parameter controls how often the 1st stage amplifier power level values are sampled.

GO Values: “100 milliSec”, “200 milliSec”, “500 milliSec”, “1 Sec”, “2 Sec”, “5 Sec”, “10 Sec”, “30 Sec”, “1 Min”, “2 Min”, “5 Min”, “10 Min”, “30 Min”, “1 Hr”

Units: N/A

Example of Use: rx18to26.bias_switch_monitor_rate = “5 Sec”

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.start_time

Description: The default for starting a scan is to simply start as soon as possible, in which case you should not specify a start time. Start times for procedures must be set with one of the procedure keywords start_utc or start_lst. This Rcvr18_26 start_time is a lower level parameter for direct control of the Rcvr18_26 or the scan coordinator. If the Scan Coordinator manager is present this value actually sets the sc.start_time value. The rx18to26.start_time value is set only when the Rcvr18_26 is being run in stand-alone mode. UTC is assumed for this parameter.

This keyword can be set directly with the set_sc_parameter() GO glish function using the TimeStamp() glish conversion function:

set_sc_parameter('start_time', TimeStamp(hh, mm, ss, MJD))

where hh:mm:ss is the UTC time, and MJD is the Modified Julian Date. Two routines are provided for the convenience of setting the start_time using the current MJD or by specifying the Local Sidereal Time:

set_sc_start_utc('11:45:36.343') set_sc_start_lst('02:44:18')

An LST will be converted to UTC, and the time will be assumed to be in the day between the current time minus 30 minutes and plus 23 hours 30 minutes. Note the time format and the fact that they are specified as strings. When you execute the procedure

x := get_sc_parameter('start_time');

the value returned is a glish record containing the Modified Julian Date and the UTC in seconds since the beginning of the day, e.g., [seconds=61714, MJD=51821, flags=0, refFrame=1, units=1].

Units: "[seconds of day, Modified Julian Day Number]"

Example of Use: rx18to26.start_time = "[seconds=11987, MJD=52345]"

YGOR parameter:

YGOR to GO mapping:

rx18to26.stop_time

Description: The default for starting a scan is to simply start as soon as possible, in which case you should not specify a start time. If you want to specify a stop time for the 'track' procedure you must use one of the procedure keywords stop_utc or stop_lst. This scan coordinator stop_time is a lower level parameter for direct control of the scan coordinator. If the Scan Coordinator manager is present this value actually sets the sc.stop_time value. The rx18to26.stop_time value is set only when the Rcvr18_26 is being run in stand-alone mode. UTC is assumed for this parameter.

This keyword can be set directly with the set_sc_parameter() function using the TimeStamp() conversion:

set_sc_parameter('stop_time', TimeStamp(hh, mm, ss.s, MJD))

where hh:mm:ss.s is the UTC time, and MJD is the Modified Julian Date. Two routines are provided for the convenience of setting the stop_time using the current MJD or by specifying the Local Sidereal Time:

set_sc_stop_utc('11:45:36.343') set_sc_stop_lst('02:44:18')

An LST will be converted to UTC, and the time will be assumed to be in the day between the current time minus 30 minutes and plus 23 hours 30 minutes. Note the time format and the fact that it is specified as a string. When you execute the procedure

x := get_sc_parameter('stop_time');

the value returned is a glish record containing the Modified Julian Date and the UTC in seconds since the beginning of the day, e.g., [seconds=61714, MJD=51821, flags=0, refFrame=1, units=1].

Units: "[seconds of day, Modified Julian Day Number]"

Example of Use: rx18to26.stop_time = "[seconds=59306, MJD=52368]"

YGOR parameter:

YGOR to GO mapping:

rx18to26.scan_length

Description: The Scan Length is the duration of the scan in seconds. Any data integrations completed after the end of a scan will normally be discarded. Hence, the Scan Length is typically an integer number of integration times plus a second or two. If the Scan Coordinator manager is present this value actually sets the sc.scan_length value. The rx18to26.scan_length value is set only when the Rcvr18_26 is being run in stand-alone mode.

GO Values: float

Units: seconds

Example of Use: rx18to26.scan_length = 600.3

YGOR parameter:

YGOR to GO mapping:

rx18to26.next_scan_number

Description: The Scan Number normally updates at the beginning of each scan, but it may be set to a new value by setting the next_scan_number parameter value. If the Scan Coordinator manager is present this value actually sets the sc.next_scan_number value. The rx18to26.next_scan_number value is set only when the Rcvr18_26 is being run in stand-alone mode.

GO Values: integer

Units: N/A

Example of Use: rx18to26.next_scan_number = 99

YGOR parameter:

YGOR to GO mapping:

rx18to26.scan_number

Description: The scan number of the current scan if a scan is being executed, or the scan number of the last completed scan. This value is a read-only parameter. To change the scan number the next_scan_number keyword should be used.

GO Values: integer

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

rx18to26.project_id

Description: The Project ID is the "number" assigned to your program on the telescope schedule, e.g., GBT01A-011. This string is used as a directory name for your data, e.g. /home/gbtdata/GBT01A-011. If the Scan Coordinator manager is present this value actually sets the sc.project_id value. The rx18to26.project_id value is set only when the Rcvr18_26 is being run in stand-alone mode.

GO Values: N/A

Units: N/A

Example of Use: rx18to26.project_id = "GBT01A-011"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.source_name

Description: Any Source Name less than 32 characters. In pulsar observing this name is used to fetch the current pulsar timing parameters and must be in a standard 'hhmmsdd' format, e.g., 0329+54, and must match the name in the polyco.dat file. In other observing modes the Source Name is only an identifier label. If the Scan Coordinator manager is present this value actually sets the sc.source_name value. The rx18to26.source_name value is set only when the Rcvr18_26 is being run in stand-alone mode.

GO Values: N/A

Units: N/A

Example of Use: rx18to26.source_name = "3C84"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.scan_id

Description: The Scan I.D. is a supplement to the Source Name for labeling the data. It has no effect on the data taking process. The string must be less than 32 characters. If the Scan Coordinator manager is present this value actually sets the sc.scan_id value. The rx18to26.scan_id value is set only when the Rcvr18_26 is being run in stand-alone mode.

GO Values: N/A

Units: N/A

Example of Use: rx18to26.scan_id = "3C84 pointing scan"

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.state

Description: The State is a read-only parameter that shows the current state of the Rcvr18_26. The state between scans is normally Ready. The scan sequence of State is Activating, Committed, Running, and Stopping in that order. If the State shows Off or Standby, the Rcvr18_26 may be put into the ready state with the 'rx18to26.on()' glish command or by using the Scan Coordinator GUI to active the Rcvr18_26. Normally the Rcvr18_26 will be Ready when using this panel. When the Rcvr18_26 is run in stand-alone mode, a scan may be started by pressing the Start button and stopped before its normal termination by pressing the same button which will be labeled Stop while the scan is running. Setup parameters may be changed only in the Ready state.

GO Values: "Ready", "Activating", "Committed", "Running", "Stopping"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.status

Description: The Status is a read-only parameter that tells the currently highest warning or fault level for the Rcvr18_26. The possible values are clear, Info, Notice, Warning, Error, Fault, and Fatal. One of the last three conditions can prevent the scan sequence from proceeding.

GO Values: "clear", "Info", "Notice", "Warning", "Error", "Fault", "Fatal"

Units: N/A

Example of Use: N/A

YGOR parameter:

YGOR values:

YGOR to GO mapping:

rx18to26.actual_start_time

Description: The Actual Start Time is a read only parameter whose value is the UTC time and date of the when the current or last scan actually started.

Units: HH:MM:SS.S

Example of Use: N/A

YGOR parameter:

YGOR to GO mapping:

4.5.10 26 To 40 GHz (8 mm) Receiver

Not yet implemented.

4.5.11 40 To 52 GHz (6 mm) Receiver

Not yet implemented.

4.5.12 65 To 95 GHz (4 mm) Receiver

Not yet implemented.

4.5.13 95 To 115 GHz (3 mm) Receiver

Not yet implemented.

4.5.14 Prime Focus Support Rack

Not yet implemented.

4.6 Backends

4.6.1 Digital Continuum Receiver

Implemented but not yet documented.

4.6.2 Spectral Processor

Implemented but not yet documented.

4.6.3 Spectrometer

Not yet implemented.

4.6.4 Berkley-CalTech Pulsar Machine

Implemented but not yet documented.