VITA49 Keywords for the Sink and Source Components -

Keyword	Type	Description
CLASS_IDENTIFIER	String	The Class Identifier, or Class ID, field is a two-word field that identifies the Information Class and Packet Class to which the Packet Stream belongs. It is optional and its presence or absence is indicated by the ‘C’ bit field in the header. This is generated and not accepted as an input.
TimeStamp Whole Seconds	Double	The Timestamp fields indicate the time of the Context update. They typically serve to correlate Context changes conveyed in the IF Context packet with specific Data Samples in the associated Data Packet Stream. The Integer-seconds and Fractional-seconds Timestamp fields are each optional and their inclusion or exclusion is indicated by the values in the TSI and TSF fields in the header, respectively. This is generated and not accepted as an input.
TimeStamp Fractional Seconds	Double	The Timestamp fields indicate the time of the Context update. They typically serve to correlate Context changes conveyed in the IF Context packet with specific Data Samples in the associated Data Packet Stream. The Integer-seconds and Fractional-seconds Timestamp fields are each optional and their inclusion or exclusion is indicated by the values in the TSI and TSF fields in the header, respectively. This is generated and not accepted as an input.
Reference Point Identifier	Double	7.1.5.3 The Reference Point Identifier The purpose of the Reference Point Identifier is to indicate the point in the system where the Context applies. For example, when the RF Reference Frequency is sent in a Context Packet, it is desirable to state the location in the system where the Described Signal was centered at that frequency. The Reference Point Identifier (or Reference Point ID) contains the Stream ID assigned to the Reference Point. See Appendix B.1 for an example using the Reference Point Identifier field.
COL_BW	Double	7.1.5.4 The Bandwidth Field The Bandwidth field is used to describe the amount of usable spectrum at the output of a process. The definition of usable spectrum is determined and specified by the VRT equipment provider. It is typically related to band-limiting

		filters, but may be limited by other criteria. For sampled data streams, the amount of usable spectrum is typically smaller than the Nyquist bandwidth. The amount of usable spectrum is also typically larger than the bandwidth of any particular signal of interest within that band. See Appendices B.2 and B.4 for examples using the Bandwidth field.
COL_IF_FREQUENCY	Double	7.1.5.5 The IF Reference Frequency Field The IF Reference Frequency field has two distinct purposes. Its first purpose is to work in conjunction with the RF Reference Frequency field to identify the original RF frequency band from which a digital or analog IF signal* has been translated. Its second purpose is to identify the center of the band described by the Bandwidth field. The value in this field may be equal to the band center, or in some cases it may work in conjunction with the IF Band Offset field to indicate the band center.
COL_RF	Double	7.1.5.6 The RF Reference Frequency Field When a signal is downconverted to a lower frequency band, it is usually necessary to communicate the band of origin for the signal. In most cases this is accomplished using the IF and RF Reference Frequency fields.
COL_RF_OFFSET	Double	7.1.5.7 The RF Reference Frequency Offset Field This field can be used to minimize link congestion for channelized data. Some processes, such as channelizers, create a large number of narrowband signals from a wideband input signal. Each of the channelizer output signals originated from a frequency band at a constant offset from the band center of the channelizer input signal. In a system where a channelizer follows a tuner, the RF center frequencies corresponding to each channelizer output change whenever the tuner frequency changes. This could lead to the transmission of a large number of Context packets, one for each channelizer output, conveying their new RF Reference Frequency fields. The transmission of such a large number of new packets could cause link congestion. The RF Reference Frequency Offset field provides a method to send an update in only a single Context packet when the tuner

		frequency changes, avoiding potential link congestion.
COL_IF_FREQUENCY_OFFSET	Double	7.1.5.8 The IF Band Offset Field Typically the spectral band whose width is described by the Bandwidth field of Section 7.1.5.4 is symmetric about the IF Reference Frequency described in Section 7.1.5.5. For cases where it is not symmetric about this frequency, the IF Band Offset field is used to specify the frequency offset from the IF Reference Frequency to the center of the band. When the IF Band Offset field is present in the IF Context Packet Class, the center of the band is located at the sum of the IF Reference Frequency and the IF Band Offset.
COL_REFERENCE_LEVEL	Float	7.1.5.9 The Reference Level Field The purpose of the Reference Level field is to relate the physical signal amplitude at the Reference Point (as identified by the Reference Point ID) with the values of the Data Samples in an IF Data packet payload. The unit of measure for the Reference Level field is power, in dBm, since power is the preferred unit of measure when dealing with RF signals. The power value conveyed by the Reference Level field is the AC power of a single sine wave at the Reference Point that results in a digitized sine wave with peak amplitude of one*, in the payload of the paired Data Packet Stream.
COL_GAIN	Float	The Gain Field contains two 16-bit subfields, Stage 1 Gain and Stage 2 Gain, which occupy the lower and upper 16 bits of the Gain Field, respectively. In RF equipment such as tuners and receivers, the total gain of the equipment is typically distributed to allow tradeoffs between noise power and linearity. For such equipment, Stage 1 Gain conveys the front-end or RF gain, and Stage 2 Gain conveys the back-end or IF gain. For equipment that does not require gain distribution, Stage 1 Gain provides the gain of the device, and Stage 2 Gain is set to zero.
DATA_GAIN	Float	The Gain Field contains two 16-bit subfields, Stage 1 Gain and Stage 2 Gain, which occupy the lower and upper 16 bits of the Gain Field, respectively. In RF equipment such as tuners and receivers, the total gain of the equipment is

		receivers, the total gain of the equipment is typically distributed to allow tradeoffs between noise power and linearity. For such equipment, Stage 1 Gain conveys the front-end or RF gain, and Stage 2 Gain conveys the back-end or IF gain. For equipment that does not require gain distribution, Stage 1 Gain provides the gain of the device, and Stage 2 Gain is set to zero.
ATTENUATION_SUM	Float	
OVER_RANGE_SUM	Float	7.1.5.11 The Over-range Count Field The Over-range Count field is used to convey the number of over-range Data Samples in a single paired Data packet.
TIMESTAMP_ADJUSTMENT	Long	7.1.5.13 The Timestamp Adjustment Field Typically, the purpose of a VRT system is to extract some information from a signal detected by one or more sensors. As an RF signal propagates through the system, it is typically delayed by the various processes, both before and after digitization. When the information is extracted from the signal, it is often important to calculate exactly when this information arrived at the sensor. The Timestamp field in the IF Data packet is often used to give the time of signal digitization. The Timestamp Adjustment field is used to adjust this Timestamp so that together they reflect the Reference Point Time. The Reference Point Time is when the information was present at the Reference Point, which may be some upstream analog process such as an antenna. See Appendix B.8 for an example using the Timestamp Adjustment field.
SampleRate	uint32_t	7.1.5.12 The Sample Rate Field Rule 7.1.5.12-1: The Sample Rate field shall express the sample rate of the Data Samples in the payload of the paired Data Packet Stream.
TIMESTAMP_CALIBRATION	Long	7.1.5.14 The Timestamp Calibration Time Field The Timestamp Calibration Time field conveys the date and time at which the Timestamp in the Data and Context packets was known to be correct. The Timestamp Calibration Time is useful in

		situations where GPS loss-of-signal causes the local reference oscillator to become free-running or where UTC time is not constantly monitored to detect the insertion or removal of leap-seconds. The Timestamp Calibration Time field uses the same timebase format used for the Integer-seconds Timestamp field as indicated by the TSI field.
TEMPERATURE	Float	7.1.5.15 The Temperature Field The purpose of this field is to convey the temperature of some process or process component that may affect some aspect of the Described Signal.
DEVICE_IDENTIFIER	String	7.1.5.16 The Device Identifier Field The Device Identifier field is used to identify the manufacturer and model of the device generating an IF Context Packet Stream. It contains a manufacturer OUI subfield which specifies the manufacturer of the emitting device and a subfield that contains a code that uniquely identifies a particular model for that manufacturer. The Device Identifier field differs from the Class Identifier field optionally included in all packet types. The Device Identifier field specifies the manufacturer of the device emitting the VRT Packet Stream, whereas the Class Identifier field specifies the organization that defined the format of the VRT Packet Stream and a unique code to identify that format.
CALIBRATED_TIME_STAMP	Boolean	Rule 7.1.5.17-4: The Calibrated Time Indicator, when set to one, shall indicate that the Timestamps in the Context Packet Stream and in the associated Data Packet Stream are calibrated to some external reference. When set to zero this Indicator shall indicate that the Timestamps are free-running and may be inaccurate.
DATA_VALID	Boolean	Rule 7.1.5.17-5: The Valid Data Indicator, when set to one, shall indicate that the Data in the associated Data packet is valid. When set to zero it shall indicate that some condition exists that may invalidate the Data.
REFERENCE_LOCKED	Boolean	Rule 7.1.5.17-6: The Reference Lock Indicator, when set to one, shall indicate that any phase-locked loops (PLL)

		affecting the Described Signal are locked and stable. When set to zero it shall indicate that at least one PLL is not locked and stable.
AUTO_GAIN_CONTROL	Boolean	Rule 7.1.5.17-7: The AGC/MGC Indicator, when set to one, shall indicate that AGC (Automatic Gain Control) is active. When set to zero, it shall indicate MGC (Manual Gain Control).
SIGNAL_DETECTION	Boolean	Rule 7.1.5.17-8: The Detected Signal Indicator, when set to one, shall indicate that Described Signal contains some detected signal.
DATA_INVERSION	Boolean	Rule 7.1.5.17-9: The Spectral Inversion Indicator, when set to one, shall indicate that the spectrum of the signal conveyed in the data payload is inverted with respect to the signal at the Reference Point.*
OVER_RANGE	Boolean	Asserted when sample saturates the data representation value
SAMPLE_LOSS	Boolean	Asserted when samples are lost
GEOLOCATION_GPS	Structure	Defined in VITA49_struct_keywords.h 7.1.5.19 The Formatted GPS (Global Positioning System) Geolocation Field The GPS (Global Positioning System) and INS (Inertial Navigation System) Geolocation fields share the same format
GEOLOCATION_INS	Structure	Defined in VITA49_struct_keywords.h 7.1.5.20 The Formatted GPS (Global Positioning System) Geolocation Field. The GPS (Global Positioning System) and INS (Inertial Navigation System) Geolocation fields share the same format
EPHEMERIS_ECEF	Structure	Defined in VITA49_struct_keywords.h 7.1.5.21 The ECEF (Earth-Centered, Earth-Fixed) Ephemeris Field. The ECEF Ephemeris field provides a format to convey location in Earth-Centered, Earth-Fixed Cartesian coordinates. It also contains a Cartesian decomposition of velocity and attitude. See Appendix B.10 for an example using the ECEF Ephemeris field.
EPHEMERIS_RELATIVE	Structure	Defined in VITA49_struct_keywords.h 7.1.5.22 The ECEF (Earth-Centered, Earth-Fixed) Ephemeris Field. The ECEF Ephemeris field provides a format to convey location in Earth-Centered, Earth-Fixed Cartesian

		coordinates. It also contains a Cartesian decomposition of velocity and attitude. See Appendix B.10 for an example using the ECEF Ephemeris field.