Kairos Autonomi
498 W. 8360 S.
Sandy, Utah 84070
801-255-2950 (office)
801-907-7870 (fax)
www.kairosautonomi.com

BULLETIN
BUL-009

Beacon UDP Message Information

Kairos Autonomi's SharedLinkF software has been configured to generate a data beacon. This beacon can assist Kairos Autonomi customers that want specific, real-time data transmitted from the Pronto4 system.

The beacon data is populated with GPS Latitude, Longitude, Heading, and Velocity information. It is transmitted as a broadcast UDP message to port 7013 at a rate of 200 ms. The message contents are actual SharedLink protocol packets including the trailing carriage return line break pair. No data compression is used; the entire packet and all details are transmitted each time. If data compression is desired, only the deltas with periodic synchronization packets can be transmitted. This results in about a 60% overall compression.

STANDARD SHAREDLINK MESSAGE PROTOCOL

NOTE
Spaces shown in examples are for clarity only. Actual SharedLink messages do not typically have any spaces.

The Beacon uses the same protocols as other SharedLink messages.

LINE PROTOCOL

Lines are started with open, close, and line termination characters.

'['   Open channel character
']'   Close channel character
crlf   End of line character pair

Shared link messages are contained between the open and close characters as shown.

[header addresses message_body_1 … message_body_*x* checksum] crlf

The header is a colon character ':', the destination address, and source address. Addresses are the characters 'A' through 'P' assigned to addresses 1 – 16.

The destination character is followed by the source character.

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[: A B message_body_1 … message_body_*x* checksum] crlf

This example message is addressed to node 1 sent from node 2, i.e. sent to A from B.

Fields are separated by the pipe character "|".

[: A B | message fields | checksum] crlf

It is assumed that a valid message_body ends with a checksum field.

[: A B | message fields | C xx] crlf

where 'xx' is the calculated checksum and is always 2 characters.

The checksum is the hex value of a simple modulo 8 addition of the ASCII values of all the characters from the header ":" to the checksum field indicator "C" inclusive. The following pseudo formula indicates the checksum approach.

((ASCII(:) + ASCII(A) + ASCII(B) + ASCII(|) + ... + ASCII(|) + ASCII(C)) Modulo 8) DecimalToHex

MESSAGE BODY PROTOCOL

Each message_body consists of multiple fields based upon the mode of the packet. Fields within the message_body are separated by the pipe character "|".

Each message_body field begins with a field type character, e.g., 'D' for data, 'T' for type, 'Q' for query, 'C' for checksum, etc.

BEACON MESSAGES

Beacon message fields typically include:

N*ord*| starting ordinal in data array
           ord = 0 to *n*
T*type*| Type of shared variable to respond with
           long = 0; double = 2; string = 4
Q*svname*| Name of the shared variable with data following
           If it does not exist it is created with the previously defined type
D*data*| Data to write into shared variable, proper type context

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EXAMPLE

[:AB|N0|T2|QAutoGpsLat|D38.34698779|T2|QAutoGpsLon|D-77.05734791|T2|QAutoGpsHead|D57|T2|QAutoGpsVel|D0|CF8]

[	channel open
:	header open
A	to node 1
B	from node 2
		Field separator
N	Field type - Packet mode
0	Packet mode starting at 0
		Field separator
T	Field type - Type
2	Type is double
		Field separator
Q	Field type - Shared variable name
AutoGpsLat	Shared variable name
		Field separator
D	Field type – Data
38.34698779	Data value
		Field separator
	Message body for AutoGpsLon value
	Message body for AutoGpsHead value
	Message body for AutoGpsVel value
		Field separator
C	Field type - Checksum
F8	Checksum value
]	channel close

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