



**MATTERSOFT LIVE! INTERFACE DESCRIPTION FOR
HELSINKI REGION TRANSPORT**

July 2011

**CONFIDENTIAL,
FOR THE USERS OF LIVE!-INTERFACES ONLY**



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VERSION	DATE	RESPONSIBLE PERSON	DESCRIPTION OF CHANGES
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1.3	14.1.2011	Laura Niittyliä, Juha Tikkanen	Translation from Finnish to English, layout modifications and some minor adjustments
1.4	31.1.2011	Pekka Kaarela	Minor changes
1.5	7.7.2011	Juha Tikkanen	IP-address update, minor changes
1.51	12.8.2011	Juha Tikkanen	Minor fix: PUSH interface Username and password are separated by semicolon

1. INTRODUCTION

This document describes the external interfaces of Mattersoft Live! -system in Helsinki. There are two types of interfaces: a push-interface for socket connections and a http-request interface.

2. PUSH-INTERFACE

2.1. General information

Push-interface is used to send data to the customers, who are connected to the interface through socket-connection. It is possible to feed different parameters to limit the data sent by the interface.

2.2. Interface address

Interface address is: <http://83.145.232.209:8080>

2.3. Messages

2.3.1. Format

Push-interface's standard message format is following:

Standard message from the vehicle:

id;name;type;ip;lat;lng;speed;bearing;acceleration;gpsTimeDifference<CR><LF>

Standard message from the vehicle onroute:

id;name;type;ip;lat;lng;speed;bearing;acceleration;gpsTimeDifferece;route;direction;departure;departureTime;departureStartsIn;distanceFromStart;snappedLat;snappedLng;snappedBearing;nextStopIndex;onStop;differenceFromTimetable<CR><LF>

PING-message that the server uses to check the connection to a client:

PING<CR><LF>

In client application there is no need to react in any way to a PING-message.

2.3.2. Interface data types

Field	Explanation	Example	Type and number of decimals
id	Vehicle id	CEENG1074300245	String
name	Name of the vehicle	PL / 811	String
type	0 = bus 1 = tram	0	bit
ip	Vehicle ip-address	127.0.0.1	String
lat	Vehicle Latitude WGS84 coordinate with four decimals	60.2244	Double, DD.dddd/DDD.dddd
lng	Vehicle Longitude WGS84 coordinate with four decimals	24.9064	Double, DD.dddd/DDD.dddd
speed	Vehicle speed km / h	42.74	Double, 0.00
bearing	Vehicle bearing in degrees	225	Double, 0.00
acceleration	Vehicle acceleration based on the two last speed measurements m/s ²	1.65	Double, 0.00
gpsTimeDifference	Difference between time stamp of vehicle device and Live!-system in milliseconds when message is received by Live!-server	-28.11*1008	Double, 0.00
route	Route id	1062	String
direction	Direction on route	1	Int
departure	Route departure identification	1045	String
departureTime	Time of departure	03092008111504	DateTime (ddMMyyyyHHmmss)
departureStartsIn	Time to departure in seconds. After	20	Int



	departure, value is 0		
distanceFromStart	Distance form route starting point in meters	500	Double
snappedLat	Latitude coordination point snapped for route	60.2350	Double, DD.dddd/DDD.dddd
snappedLng	Longitude coordination point snapped for route	24.9100	Double, DD.dddd/DDD.dddd
snappedBearing	Vehicle bearing snapped for route.	225	Double
nextStopIndex	Index number of next stop	1	Int
onStop	Information on vehicle location(on stop/not on stop) 1=on stop, 0= not on stop	0	Boolean
differenceFromTimetable	Difference between timetable and the last stop passing in seconds. Positive value= before scheduled, negative value= late from schedule.	12	Int

2.3.3. List of parameters

When using Push-interface, a user parameter must be given, so that the users can be identified. It is also possible to give one other parameter additional to user-parameter to reduce the amount of received information. Unless other parameters are given, information from all the vehicles user is allowed to view will be sent to the interface. From the interface all information about vehicles will be sent and the user can only limit the amount of vehicles sent with the parameters. Route-parameter is the only parameter for which users can give several values, separated by comma. The maximum number of route-parameters is 10.

Below is a list of parameters, with their meanings and examples

Parameter	Example value	Explanation
user	XXX;111	Username and password separated by semicolon
parameter_name	id: CEENG1074300245 type:1 route:1064,1052V.1 onroute:1	Push-interface's parameter that reduces messages. Feeding: type of parameter: limitation id = vehicle id type = vehicle type (1=bus, 2=tram) route = vehicle route with direction(direction optional) onroute = limits the vehicles to those onroute (0=not logged on route, 1=logged on route)

When a connection is created for first time, the first message is read as a parameter message. When the connection is closed this message needs to be sent again. The parameters cannot be changed during the connection.

Access to interface is asked with account request form (<http://developer.reittiopas.fi/pages/en/account-request.php>).

Example message of giving parameters:

&<username>;<password><space><parameter name>:<parameter value>&

Examples:

Example message:

&hkl;1559 route:1064,1052V&

Explanation:

Returns information for a certain customer about vehicles on lines 1064 and 1052V.

Example message:

&hkl;1559 route:1064.1,1052V.1&

Mailing address	Tampere Office	Helsinki Office	Tel. +358 10 322 5000
PL 507	Pinninkatu 45 A	Heikkiläntie 7	Fax. +358 10 322 5009
33101 Tampere	33100 Tampere	00210 Helsinki	info@mattersoft.fi
Finland	Finland	Finland	www.mattersoft.fi

Explanation:

Returns information for customer about vehicles on lines 1064 and 1052V, going on direction 1.

Example message:

&hkl;1559 type:1&

Explanation:

Returns information about vehicles of type bus.

Example message:

&hkl;1559 onroute:1&

Explanation:

Returns information for customer about all vehicles logged on route.

3. REQUEST INTERFACE

3.1. General information

The interface serves i.e. internet-pages that collect information from Mattersoft Live! system. Data transfer of the interface is based on http-request.

3.2. Interface address information

Interface address: <http://83.145.232.209:10001>

3.3. Request messages

3.3.1. List of parameters

In request types (see 3.3.3) each request has allowed and compulsory parameters. Parameter meanings and example values are listed in the table below.

Parameter	Example value	Explanation
online	0	0 = Request is for all the vehicles , 1 = Request is for all vehicles logged on routes
ids	id1_id2	Request is for vehicles stated and separated by an underline. One request can include a maximum of 10 idø
lines	1052.1_1064.2	Request is for vehicles stated and separated by an underline that go to the direction given after the dot. One request can include a maximum of 10 idø
line	1052V	Request is for vehicles on stated line
direction	1	In which direction the requested vehicles go
count	10	Number of values to be returned
speed	42.74	Vehicle speed km / h
bearing	225	Vehicle bearing in degrees
acceleration	1.65	Vehicle acceleration based on the two last speed measurements m/s ²
gpstimedifference	-28.11*1008	Difference between time stamp of vehicle device and Live!-system in milliseconds when message is received by server.

3.3.2. List of returned values

List of returned values explains the meanings of returned values for requests

Name	Explanation
id	Vehicle id
route	Vehicle route id
lat	Latitude coordinate point in WGS84 format
lng	Longitude coordinate point in WGS84 format
bearing	Vehicle bearing in degrees
direction	Vehicle direction on route
previous stop	Previous stop on the route
current stop	Current stop of the vehicle
departure	Vehicle departure id
speed	Vehicle speed km/h

3.3.3. Request types

3.3.3.1 Vehicle information

Type:
 Vehicle

Example request:
<http://<IP:port>/?type=vehicle&id=EFENG1061000266>

Compulsory parameters and an example value:
[?type=vehicle
 &id=CEENG1074300156](http://?type=vehicle&id=CEENG1074300156)

or
[&ip=213.214.187.223](http://?ip=213.214.187.223)

Explanation:
 Returns information from a vehicle based on id-number or ip-address.

Mailing address	Tampere Office	Helsinki Office	Tel. +358 10 322 5000
PL 507	Pinninkatu 45 A	Heikkiläntie 7	Fax. +358 10 322 5009
33101 Tampere	33100 Tampere	00210 Helsinki	info@mattersoft.fi
Finland	Finland	Finland	www.mattersoft.fi

Returned values separated by a semicolon:

id, route, lat, lng, bearing, direction, previous stop, current stop, departure, speed

Example answer:

EFENG1061000266;1058;25.0752;60.2098;357;1;1453184;0;;;1048;0;

3.3.3.2 Vehicles information

Type:

Vehicles

Example request:

http://<IP:port>/?type=vehicles&lng1=23&lat1=60&lng2=26&lat2=61&ids=CEENG1074300238_EFENG1061000266&lines=1052V.1_1052V.2&online=0

Compulsory parameters and an example value:

[?type=vehicles](#)

[&lng1=23](#)

[&lat1=60](#)

[&lng2=26](#)

[&lat2=61](#)

Optional parameters and an example value:

[&ids=CEENG1074300238_EFENG1061000266](#)

[&lines=1052V.1_1052V.2](#)

[&online=0](#)

Explanation:

Returns vehicle information inside returned coordinates given in parameters. The search can be narrowed by listing id-numbers separated with an underscore.

Returned values separated by a semicolon:

Id, route, lat, lng, bearing, direction, previous stop, current stop, departure

Example answer:

CEENG1074300238;1010;24.9375;60.1706;323;1;1020463;1020444;1044;0;

EFENG1061000266;1058;25.0604;60.2093;288;1;1453106;0;1048;52.73;

3.3.3.3 Next stops

Type:

Nextstops

Example request

<http://<IP:port>/?type=nextstops&id=CEENG1074300156&count=1>

Mailing address	Tampere Office	Helsinki Office	Tel. +358 10 322 5000
PL 507	Pinninkatu 45 A	Heikkiläntie 7	Fax. +358 10 322 5009
33101 Tampere	33100 Tampere	00210 Helsinki	info@mattersoft.fi
Finland	Finland	Finland	www.mattersoft.fi

Compulsory parameters and an example value:

[?type=nextstops &id=CEENG1074300156](#)

or

[&ip=213.214.187.223](#)

Optional parameters and an example value:

[&count=1](#)

Explanation:

Returns vehicle's line id, current stop, number of following stops according to count parameters together with the last stop. By not stating optional count parameter, all following stops will be returned.

Returned information:

Information separated by an underline are the seven-digit stop id, minutes until arrival to the stop, stop's name and type of the stop (current, normal, last).

Example answer:

3B

1070419_0_Neitsytpolku_current

1070421_0_Kapteeninkatu_normal

1171445_0_Eläintarha_last

3.3.3.4 Line name

Type:

Linename

Example request:

<http://<IP:port>/?type=linename&ip=213.214.187.223>

Compulsory parameters and an example value:

[?type=linename](#)

[&ip=213.214.187.223](#)

Explanation:

Returns the line, on which the vehicle with the requested ip-address currently is.

Example answer:

58

3.3.3.5 Stop locations

Type:

Stoplocations

Mailing address	Tampere Office	Helsinki Office	Tel. +358 10 322 5000
PL 507	Pinninkatu 45 A	Heikkiläntie 7	Fax. +358 10 322 5009
33101 Tampere	33100 Tampere	00210 Helsinki	info@mattersoft.fi
Finland	Finland	Finland	www.mattersoft.fi

Example request:

<http://<IP:port>/?type=stoplocations&line=1059&direction=1>

Compulsory parameters and an example value:

[?type=stoplocations](#)

[&line=1059](#)

[&direction=1](#)

Explanation:

Returns the seven-digit stop id and coordinates from chosen lines and directions.

Example answer:

1431108;60.1953004096488;25.0312114935582

1431187;60.1938177254382;25.0291097761654

3.3.3.6 Route

Type:

Route

Example request:

<http://<IP:port>/?type=route&line=1059&direction=1>

Compulsory parameters and an example value:

[?type=route](#)

[&line=1059](#)

[&direction=1](#)

Explanation:

Returns Google Maps ópolyline based on route name and direction.

3.3.3.7 Route WGS

Type:

Routewgs

Example request:

<http://<IP:port>/?type=routewgs&line=1059&direction=1>

Compulsory parameters and an example value:

[?type=routewgs](#)

[&line=1059](#)

[&direction=1](#)

Mailing address	Tampere Office	Helsinki Office	Tel. +358 10 322 5000
PL 507	Pinninkatu 45 A	Heikkiläntie 7	Fax. +358 10 322 5009
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Finland	Finland	Finland	www.mattersoft.fi

Explanation:

Returns routes WGS84-points based on name and directions.

Example answer:

60,1953004096488:25,0312114935582;

3.3.3.8 Route KkJ

Type:

Routekkj

Example request:

<http://<IP:port>/?type=routekkj&line=1059&direction=1>

Compulsory parameters and an example value:

[?type=routekkj](#)

[&line=1059](#)

[&direction=1](#)

Explanation:

Returns routes KkJ- points based on name and directions.

Example answer:

6676419:2557380;