



X2 Racelink Flagging Protocol

Effective from RaceLink version 2.47

MYLAPS Headquarters
Zuiderhoutlaan 4
2012 PJ Haarlem
The Netherlands
+31 (0)23 760 0100
info@mylaps.com
www.mylaps.com

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Introduction

This document describes the protocol RaceLinks use when an external Display or LED bar is configured for receiving flag signals. It is assumed that the RaceLink is already configured for external flagging by the RaceLink Tool or using the Race Control Manager.

Flag types

The following flags (and their identification code) are sent by the X2 RaceLink:

Flag code	Description
0	Unknown, used to indicate a time out, no flag code received for 1 second.
1	Clear (No flag / turn off flag)
2	Yellow
3	Double yellow
4	White
5	Green
6	Blue
7	Red
8	Oil
9	Safety car
10	Virtual safety car
11	Full course yellow
12	Code 60
13	Pit entry right
14	Pit entry left
15	Pit entry closed
16	Blue (for blue flag with number)
17	Standing start
18	Rolling start
19	Mechanical
20	Behavior
21	Black
22	Checkered
23	Next slow

24	Slow zone
25	Rain
26	Slippery
27	Logo (can be used for customer logo)
28	MYLAPS logo
29	Error
30	Speed hive
31	Yellow/Slippery
32	Double Yellow / Slippery
33-127	Reserved for future use
128-250	Custom flag, can be freely used by customer to send custom flag signals

Please refer to the “flag definitions” document to see how the flags are shown on MYLAPS Flag panels.

CAN messages

RaceLink FLAG message to external Display

<i>Name</i>	<i>Format</i>	<i>Type</i>
FLAG	0x200 (Default CAN ID)	
Code	uint8	Flag code

Sent by RaceLink every 100ms with the current flag code.

Default flag code is flag clear (flag code 1).

External Display FLAG_CONFIRM message in response to RaceLink

FLAG_CONFIRM	0x201 (Default CAN ID)	
Code	uint8	Flag code

Sent by the Display or LED bar in response to FLAG message to confirm it was received by external display or LED bar.

The RaceLink reports the flag code given in the FLAG_CONFIRM message to the X2Link server, it does not check if the flag code matches the flag code in the FLAG message.

Time out

The RaceLink will always send a FLAG message every 100ms, if the RaceLink did not receive a flag from the X2Link server, the flag is the clear flag (flag code 1).

If the display does not receive any FLAG messages for more than 1 second, it should indicate this on the display by showing the flag unknown code. RaceLinks will NEVER send a flag unknown code.

If the display does not reply to the RaceLink FLAG messages for more than 500 milliseconds the RaceLink will report flag unknown to the X2Link Server to indicate a problem with the display.

Examples

RaceLink is sending flag clear

ID	DLEN	RTR	DBO
0x200	1	False	1

Display sends back in response:

ID	DLEN	RTR	DB0
0x201	1	False	1

RaceLink is sending double yellow flag

ID	DLEN	RTR	DB0
0x200	1	False	3

Display sends back in response:

ID	DLEN	RTR	DB0
0x201	1	False	3

RaceLink is sending green flag

ID	DLEN	RTR	DB0
0x200	1	False	5

Display sends back in response:

ID	DLEN	RTR	DB0
0x201	1	False	5