

Huichang Reader API Data Protocol

1. CardDataControl (Checkpoint Object)

Represents the specific punch data at any given control point (Start, Finish, Clear, or Waypoint).

Field	Type	Description	Example
<code>num</code>	<code>number</code>	Control Point ID (0–255). Returns <code>-1</code> if data is invalid.	<code>31, 32, 33</code>
<code>time</code>	<code>string</code>	Timestamp converted to 24h format (<code>HH:mm:ss</code> or <code>HH:mm:ss.S</code>). Returns <code>"--:--:--"</code> if invalid.	<code>"09:12:03"</code> , <code>"11:45:32.12"</code> , <code>"--:--:--"</code>

2. CardDataStream (Main Data Object)

Represents a complete, parsed record of a card's punch history throughout the course.

Field	Type	Description	Example
<code>hcId</code>	<code>string</code>	Card ID: Unique 8-character Hex string of the chip.	<code>"10001234"</code>
<code>start</code>	<code>CardDataControl</code>	Start Point: Punch data at the start line (includes ms).	<i>See CardDataControl</i>
<code>finish</code>	<code>CardDataControl</code>	Finish Point: Punch data at the finish line (includes ms).	<i>See CardDataControl</i>
<code>clear</code>	<code>CardDataControl</code>	Clear Point: Punch data when the chip was reset/cleared.	<i>See CardDataControl</i>
<code>controls</code>	<code>CardDataControl[]</code>	Waypoints: Array of all intermediate checkpoints visited.	<code>[...]</code>

3. JSON Example

JSON

```
{
  "hcId": "10001234",
  "start": {
    "num": 1,
    "time": "08:30:15.0"
  },
  "finish": {
    "num": 2,
    "time": "11:45:32.12"
  },
  "clear": {
    "num": 0,
    "time": "08:00:00"
  },
  "controls": [
    {
      "num": 10,
      "time": "09:12:03"
    },
    {
      "num": 11,
      "time": "10:05:44"
    },
    {
      "num": 12,
      "time": "--:--:--"
    }
  ],
}
```