

SYSTEM OF ELECTRIFICATION *

| | Specification | Value | Measuring unit | Permitted deviation | |
|-----|---|--------|----------------|---------------------|--------------|
| | | | | Class I | Class II. |
| 1. | Voltage of electrical overhead wire | 25 000 | V | +10% -24% | +10% -24% |
| 2. | Frequency of electrical overhead wire | 50 | Hz | ±2 | ±2 |
| 3. | Minimum height dimension of electrical overhead wire above rail level: above level crossings: 6000 mm | 5050** | mm | +20 -0 | +20 -0 |
| 4. | Minimum height dimension of electrical overhead wire above level crossings | 6000 | mm | +20 -0 | +20 -0 |
| 5. | Maximum height dimension of electrical overhead wire above rail level | 6150 | mm | +0 -20 | +0 -20 |
| 6. | Staggering of electrical overhead wire: ±300 mm | ±300 | mm | ±10 | ±30 |
| 7. | Staggering of electrical overhead wire built before 1992 (tolerated value) | ±400 | mm | ±10 | ±30 |
| 8. | Maximum permissible height lift of overhead wire during the passage of pantograph | 120 | mm | | |
| 9. | Pre-sag of wire | 0 | mm | | |
| 10. | Pantograph (static) contact force | 75 | N | ±5 | ±5 |
| 11. | Section insulator - Permitted height difference of overhead wire connection | | mm | ±5 | ±15 |

* In compliance with National Railway Regulation, Volume I (Ministry of Economy and Transport, 2004)

** Exceptions:

The height of the overhead wire

- a) varies between 4820-4990 mm at the Budapest Keleti pu. station above certain tracks in profiles 11-12..
- b) on the Budapest Keleti pu.-Ferencváros line between profiles 31-32 above left track is 4940 mm, above right track 4990 mm
- c) in the Budapest Déli pu. tunnel between profiles 14-17 above left track is 4930 mm, above right track 4950 mm
- d) on the Kelenföld-Háros line between profiles 36-37 above right track is 5000 mm
- e) on the Gödöllő - Aszód line in profile 373 above right track is 5020 mm
- f) at station Hatvan between profiles 659-669 above track V, and above the crossing of tracks IV-V is 5020 mm
- g) varies in Miskolc-Rendező pu. marshalling yard in profiles 2-3 above certain tracks between 5002-5035 mm
- h) varies at Budapest Nyugati pu. station in profiles 19-22 above different tracks between 4820-4910 mm
- i) at Kőbánya teher pu. station in profiles 68-69 above track VIII is 4940 mm
- j) on the Mende-Sülysáp line in profiles 237-238 above both tracks is 5030 mm
- k) on the Debrecen-Apafa line in profiles 2230-2231 above right track is 4960 mm
- l) at Békéscsaba station in profiles 857-858 above track I is 4980 mm, above track XV 5000 mm, above track XVI 4980 mm
- m) at Pécs station in profiles 48-49 above track II is 5030 mm, above track III 5000 mm, above track IV 4990 mm
- n) at Tüskevár station in profiles 999-1000 above through track I is 5020 mm

All the electrified lines on the railway network of MÁV Zrt are rated as Class I.

**Voltage of the electrical overhead wire in electrified border crossings
MÁV Zrt.**

| | Name of the border crossing | Infrastructure Managers | Voltage/frequency of the overhead wire | |
|----|-----------------------------|-------------------------|--|-----------------|
| | | | MÁV Zrt | Next IM |
| 1. | Hegyeshalom - Nickelsdorf | MÁV/ÖBB | 25 kV/50 Hz | 15 kV/16 2/3 Hz |
| 2. | Gyékényes - Koprivnica | MÁV/HŽ | 25 kV/50 Hz | 25 kV/50 Hz |
| 3. | Kelebia - Subotica | MÁV/ŽS | 25 kV/50 Hz | 25 kV/50 Hz |
| 4. | Lőkősháza - Curtici | MÁV/CFR | 25 kV/50 Hz | 25 kV/50 Hz |
| 5. | Hidasnémeti - Căna | MÁV/ŽSR | 25 kV/50 Hz | 3 kV DC |
| 6. | Szob - Sturovo | MÁV/ŽSR | 25 kV/50 Hz | 25 kV/50 Hz |
| 7. | Komárom - Komarno | MÁV/ŽSR | 25 kV/50 Hz | 25 kV/50 Hz |
| 8. | Óriszentpéter - Hodoš | MÁV/SŽ | 25 kV/50 Hz | 25 kV/50 Hz |

GYSEV Zrt.

| | Name of the border crossing | Infrastructure Managers | Voltage/frequency of the overhead wire | |
|----|-----------------------------|-------------------------|--|-------------|
| | | | GYSEV Zrt. | Next IM |
| 1. | Sopron - Baumgarten | GYSEV | 25 kV/50 Hz | 25 kV/50 Hz |
| 2. | Harka - Deutschkreutz | GYSEV/ÖBB | 25 kV/50 Hz | 25 kV/50 Hz |
| 3. | Fertőszentmiklós - Pamhagen | GYSEV | 25 kV/50 Hz | 25 kV/50 Hz |
| 4. | Rajka - Rusovce | GYSEV/ŽSR | 25 kV/50 Hz | 25 kV/50 Hz |