

The basic unit of the integrated on-board system MIREL RM2

Type RM2ZJ

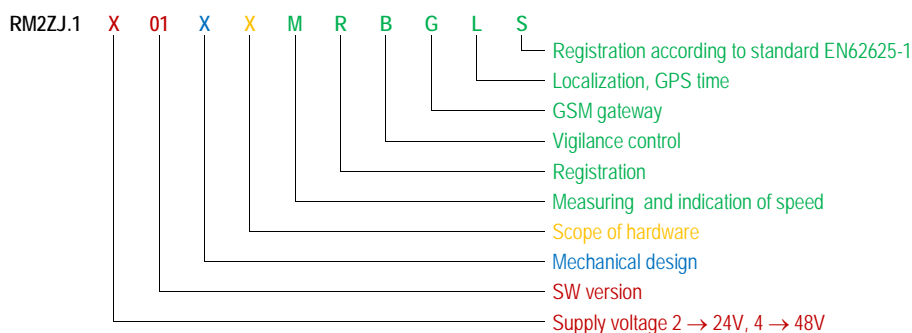
illustration picture

The basic unit ensures most of the operational conditions of the intergraded on-board system MIREL RM2: the measuring of the immediate speed through the impulse revolution sensor, the measuring of the distance travelled, the control of the train operator's vigilance, the displaying of the safe digital outputs depending on the immediate speed rate, the registration of the instantaneous velocity and the additional operating and technical data in relation to the time and track's independent scale, the scanning of the registered inputs and displaying the outputs of the integrated on-board system, the communication with indication and identification units at the cab, self-diagnostics and diagnostic tests. The default basic unit contains two¹⁾ registration data media, the operational and the backup one. The operational data medium is intended for the validation by the HDV operator and it is placed under the cover on the front panel. The backup data medium is placed inside the basic unit and it is accessible only to the service staff of the manufacturer. The operational data medium is during the normal operation inserted under the cover in the basic unit. In order to read and evaluate its contents the operational data media must be removed from its basic unit and the registered data must be reviewed and evaluated using the application MIREL MAN in a personal computer.



¹⁾ modification of basic unit that allow it, can be equipped with a third storage medium meeting the requirements of the standard EN62625-1.

Nomenclature



Modifications – mechanical design

| Designation | Construction system | Modification of construction system | Assembly | IP rating | Max. weight for full fitting [kg] | No. of slots |
|-------------|---------------------|-------------------------------------|--------------|--------------------|-----------------------------------|--------------|
| A | BOXU | 3UA | not embedded | IP20 ¹⁾ | 9,8 | 15 |
| B | BOXU | 3UB | embedded | IP20 ¹⁾ | 9,9 | 15 |
| E | BOXU | 3UHA | not embedded | IP20 ¹⁾ | 3,8 | 7 |
| F | BOXU | 3UHB | embedded | IP20 ¹⁾ | 3,9 | 7 |
| L | BOXTUG | 17A | left | IP40 | 1,8 | 4 |
| P | BOXTUG | 17A | right | IP40 | 1,8 | 4 |
| M | BOXTUG | 09A | left | IP40 | 1,3 | 2 |
| R | BOXTUG | 09A | right | IP40 | 1,3 | 2 |
| U | BOXKOG | 17 | - | IP40 | 2,0 | 4 |
| V | BOXKOG | 19 | - | IP40 | 1,4 | 2 |

¹⁾ possibility of increasing IP rating to IP30 according to document 1975M

Modification – scope of hardware

| Designation | Safety integrity level | Number of safety binary inputs | Number of other binary inputs | Number of analogue inputs | Max. number of safety binary outputs | Number of other binary outputs | Number of ext. lines CAN | Number of ext. lines SPI | Number of ext. lines RS485 | Max. capacity [GB] |
|-------------|------------------------|--------------------------------|-------------------------------|---------------------------|--------------------------------------|--------------------------------|--------------------------|--------------------------|----------------------------|----------------------|
| A | SIL4 | 8 | 64 | 10 | 3 | 0 | 3 | 1 | 1 | 2x14 |
| B | SIL4 | 8 | 28 | 10 | 3 | 6 | 3 | 1 | 1 | 2x14 |
| C | SIL4 | 8 | 12 | 0 | 3 | 6 | 3 | 0 | 1 | 2x14 |
| D | SIL0 | 0 | 8 | 0 | 0 | 3 | 3 | 0 | 1 | 1x14 |
| E | SIL4 | 8 | 140 | 20 | 3 | 6 | 4 | 1 | 2 | 2x14 |
| F | SIL4 | 8 | 12 | 0 | 3 | 6 | 3 | 1 | 1 | 2x14 |
| G | SIL4 | 8 | 0 | 0 | 3 | 0 | 3 | 0 | 1 | 2x14 |
| H | SIL4 | 8 | 28 | 0 | 3 | 6 | 3 | 1 | 1 | 2x14 |
| J | SIL4 | 8 | 64 | 10 | 3 | 0 | 3 | 1 | 1 | 2x14+4 ²⁾ |
| K | SIL4 | 8 | 0 | 0 | 3 | 0 | 3 | 1 | 1 | 2x14+4 ²⁾ |
| L | SIL4 | 8 | 52 | 0 | 3 | 6 | 3 | 1 | 1 | 2x14 |
| M | SIL4 | 8 | 28 | 0 | 3 | 6 | 3 | 1 | 1 | 2x14 |
| N | SIL4 | 8 | 24 | 0 | 3 | 0 | 3 | 0 | 1 | 2x14 |
| P | SIL4 | 8 | 16 | 0 | 3 | 0 | 3 | 0 | 1 | 2x14 |
| R | SIL4 | 8 | 0 | 0 | 3 | 0 | 3 | 1 | 1 | 2x14 |

²⁾ capacity of storage media according to standard EN62625-1

Modifications

| Designation | Supply voltage [VDC] | Construction system | Assembly | No. of slots | Number of other binary inputs | Number of analogue inputs |
|--------------------|----------------------|---------------------|--------------|--------------|-------------------------------|---------------------------|
| RM2ZJ.1.201AAMRL | 24 | BOXU | not embedded | 15 | 64 | 10 |
| RM2ZJ.1.201AAMR | 24 | BOXU | not embedded | 15 | 64 | 10 |
| RM2ZJ.1.201BBMRL | 24 | BOXU | embedded | 15 | 28 | 10 |
| RM2ZJ.1.201BBMR | 24 | BOXU | embedded | 15 | 28 | 10 |
| RM2ZJ.1.201BEMRBGL | 24 | BOXU | embedded | 15 | 140 | 20 |
| RM2ZJ.1.201EBMRBGL | 24 | BOXU | not embedded | 7 | 28 | 10 |
| RM2ZJ.1.201AJMRLS | 24 | BOXU | not embedded | 15 | 64 | 10 |
| RM2ZJ.1.201BKMRLS | 24 | BOXU | embedded | 15 | 0 | 0 |
| RM2ZJ.1.201ARMRL | 24 | BOXU | not embedded | 15 | 0 | 0 |
| RM2ZJ.1.201LCMRBGL | 24 | BOXTUG | left | 4 | 12 | 0 |
| RM2ZJ.1.201LCMRBL | 24 | BOXTUG | left | 4 | 12 | 0 |
| RM2ZJ.1.201LCMRB | 24 | BOXTUG | left | 4 | 12 | 0 |
| RM2ZJ.1.201MDMRGL | 24 | BOXTUG | left | 2 | 8 | 0 |
| RM2ZJ.1.201PGMB | 24 | BOXTUG | right | 4 | 0 | 0 |
| RM2ZJ.1.201LNMRL | 24 | BOXTUG | left | 4 | 24 | 0 |
| RM2ZJ.1.201AHMRL | 24 | BOXU | not embedded | 15 | 28 | 0 |
| RM2ZJ.1.201BHMRL | 24 | BOXU | embedded | 15 | 28 | 0 |
| RM2ZJ.1.401BFMRL | 48 | BOXU | embedded | 15 | 12 | 0 |
| RM2ZJ.1.401BHMRL | 48 | BOXU | embedded | 15 | 28 | 0 |
| RM2ZJ.1.401LCMRBL | 48 | BOXTUG | left | 4 | 12 | 0 |

Modifications prepared for new application

| Designation | Supply voltage [VDC] | Construction system | Assembly | No. of slots | Number of other binary inputs | Number of analogue inputs |
|--------------------|----------------------|---------------------|----------|--------------|-------------------------------|---------------------------|
| RM2ZJ.1.201UCMRBGL | 24 | BOXTUG | - | 4 | 12 | 0 |
| RM2ZJ.1.201UCMRBL | 24 | BOXTUG | - | 4 | 12 | 0 |
| RM2ZJ.1.201UCMRB | 24 | BOXTUG | - | 4 | 12 | 0 |
| RM2ZJ.1.201VDMRGL | 24 | BOXTUG | - | 2 | 8 | 0 |
| RM2ZJ.1.401UCMRBL | 48 | BOXTUG | - | 4 | 12 | 0 |

Specification

| Number | Version | Name |
|---------|---------|--------------------------------|
| 1068M | 170516 | BOXTUG Installation conditions |
| 1975M | 161208 | BOXU.2 Installation conditions |
| 1976RM2 | 191015 | Technical conditions |
| 2468M | 191016 | BOXKOG Installation conditions |

Usage

MIREL RM2 – The integrated on-board system