

RAILWAYS Range

Monoblock Dialogue

ERES81 1353

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DESCRIPTION

The ERES81 1353 is a short-range transceiver that operates at a frequency of 13,56 MHz. It is a monoblock device with built-in antenna, equipped with two circular connectors. Based on an inductive transmission, it communicates with a second identical device facing it on ground or on board, for data exchange for railway applications. Two transceivers facing each other, exchange by radio the data they received on their respective RS422 serial link (10 pins connector), it is the ERCP mode. Then, they transmit the data received by radio to a control equipment, through their RS422 serial link. A second connector (19 pins) provides together the digital inputs/outputs. The ERES81-1353 can transmit one of the four pre-recorded frame (it is the ERES mode), as to the selected digital input. These frames can be modified through the RS422 link (refer to the user manual).

The ERES81 can operate indifferently with one or two connected connectors. Two caps are provided with the ERES81 1353, one for the 19 pins connector to use only the 10 pins connector (usefull for the ERCP mode), and one for the 10pins connector to use only the 19 pins connector (usefull for ERES mode alone).

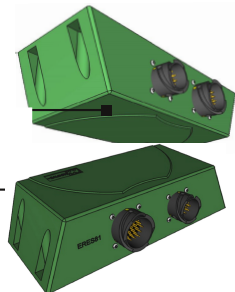


FUNCTIONAL DATA

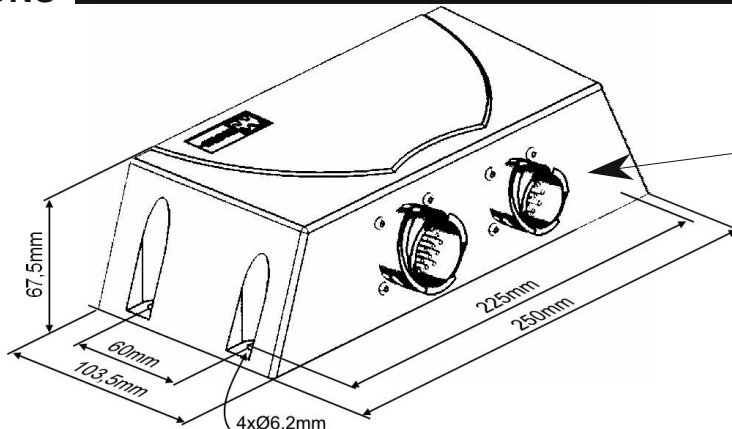
The monoblock dialogue function in face to face with an other apparatus, e.g. with an ERES81-1353 on board and an ERES81-1353 on ground):

ERES81-1353
(lower face)

ERES81-1353
(higher face)



DIMENSIONS



Marking : Part number identification :
ERES81 1353

Serial number identification :
yywwxxxxx-nnn-vvv
yy = year
ww=week
xxxxxx= manufacturing order
nnn=serial number
v=revision index

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TECHNICAL SPECIFICATIONS

Functional

min	typ	max	unit
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Non metallic environment n°1* for the first ERES81 1353 and metallic environment n°2* for the second ERES81 1353

Nominal range		800		mm
Recommended range	100		600	mm
Transmission zone length (1)	500			mm
Distance between ERESs on same plane (track)	2400			mm

* : see mounting specification

Emission carrier frequency		13,56		MHz
Exchange time of radio frequency messages (N=total number of bytes exchanged)		2,1 + 0,138xN		ms

(1) : Conditions :

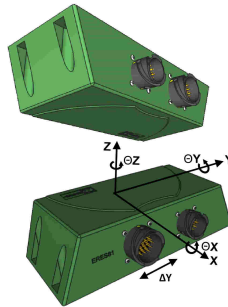
- at $\Delta z=30\text{cm}$ (Δz is the distance between the two opposite faces of the monoblocs)

- maximum angular offset

$\theta_x : +/- 10^\circ$; $\theta_y : +/- 5^\circ$; $\theta_z : +/- 10^\circ$

and

- maximum shift $\Delta y = +/- 100\text{mm}$



Power supply

DC power supply (ripple included) : Upwr	16,8	24	30	V
Mean current consumption @ 24Vdc			250	mA
Protection against reverse polarity	protected			-

RS 422 serial link

Transmission speed		19.200		bit/s
Impedance line (internaly match)		120		Ω
Accidental connections to other pins		protected		

Inputs : opto isolated, polarized, one common

Logical "1" level V_{IH}	15	24	29	V
Logical "0" level V_{IL}			5	V
Holding time for validation of the inputs ("0" or "1")	250			ms
Input impedance		5.000		Ω
Protection against reversed polarity		protected		

Outputs:opto isolated,isolated between each other,non polarized,voltage free,normally opened

Switching voltage			29	V
Switching current			250	mA
Residual resistance	8		10	Ω
Short circuit of the load		protected		

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TECHNICAL SPECIFICATIONS

Insulation Groups	min	typ	max	unit
N°1 : Power supply, RS 422 serial link, input "mode"				-
N°2 : Inputs I1, I2, I3, I4, input common				-
N°3 : Output O1 (2 leads)				-
N°4 : Output O2 (2 leads)				-
N°5 : Output O3 (2 leads)				-
N°6 : Output O4 (2 leads)				-
N°7 : Output "presence" (2 leads)				-
N°8 : Connector bodies, cable shields				-
Insulation voltage between each group	2.000			Veff
Insulation resistance between each group @ 500Vdc	1			GΩ

Environment

Operating temperature	-40*		+70	°C
Storage temperature	-40		+85	°C
Electromagnetic (EMC) according to	EN 50121-3-2 & EN 50121-4			-
Radiofrequency according to	EN 300 330			-
Shocks and vibrations :	mounting on bogie mounting on sleeper	EN 50155 - EN 61373 cat2 EN 50125-3		-
Flammability grade according to	EN 45545-2 - HL2 / R23			-
Ingress protection rating	IP67			-

* : derating of the nominal range and recommended range of 10% around -40°C.

Enclosure

Weight		2400		g
Enclosure material	PA6 (Polyamide 6)			-
Coating	Polyurethane			-
Recommended tightening torque (4 screws)		5		N.m

RAMS features

MTBF according to IEC62380 railways	mobile installation : 446.238 fixed installation : 637.899	h
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CONNECTING

□ Recommended cables:

○ 10 pins Serial link cable

- 6 to 8 conductors :
 - 2 or 4 conductors for power supply.
 - 2 twisted pairs with a line impedance of 120Ω for the RS-422 link (adaptation inside the unit).
- 1 overall shield; it must be in contact over 360° to the metallic cable connector housing.
- Connection of conductors to the cable connector by crimping; wire cross section: : 0.5 to 1.5mm².
- Outer diameter of the cable: 8 to 12,5mm (see § accessories).
- Length: 1200m max and 180 to 540m max for power link according to wire cross section.

○ 19 pins Input/Output cable

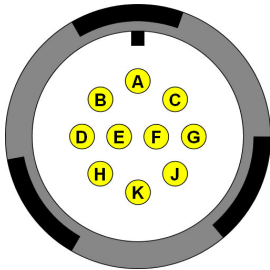
- 19 conductors
- 1 overall shield; it must be in contact over 360° to the connector body.
- Connection of conductors to the cable connector by crimping; conductor cross section: : 0.5 to 1.5 mm².
- Outer diameter of the cable: 13.5 to 18mm (see § accessories).

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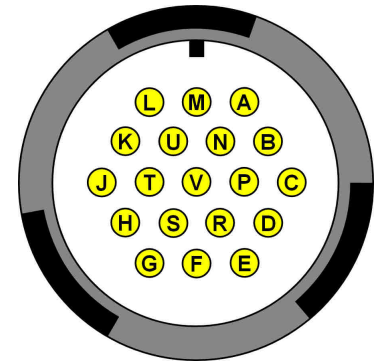
□ Connection:

Pin	10 pins connector : Serial link
A	Upwr : Power supply 24Vdc
B	Reserved
C	Reserved
D	RS422 : Tx-
E	RS422 : Tx+
F	RS422 : Rx-
G	RS422 : Rx+
H	Reserved
J	Reserved
K	0Vdc : Ground



VGE1 type connector from Souriau
Pin side view of the male receptacle
(or wiring side view of the female plug)

Pin	19 pins connector Inputs/Outputs
A	Output: O1-1 (STOR1)
B	O5-2"Output Presence"(1)
C	Output : O2-1 (STOR2)
D	Output : O4-1 (STOR4)
E	Output : O3-2 (STOR3)
F	Output : O3-1 (STOR3)
G	Common ground for inputs
H	Input : I1 (ETOR1)
J	ERCP/ IERES mode (2)
K	0Vdc : Ground
L	Upwr : Power supply 24Vdc
M	Output : O1-2 (STOR1)
N	O5-1"Output Presence"(1)
P	Output : O2-2 (STOR2)
R	Output : O4-2 (STOR4)
S	Input : I4 (ETOR4)
T	Input : I2 (ETOR2)
U	0Vdc : Ground
V	Input : I3 (ETOR3)



VGE1 type connector from Souriau
Pin side view of the male receptacle
(or wiring side view of the female plug)

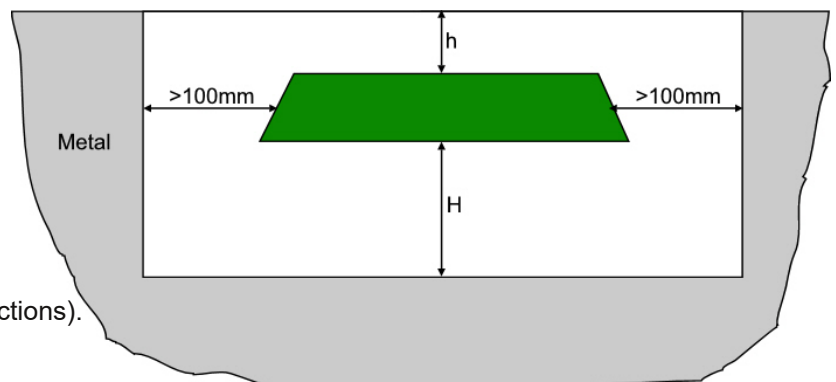
- (1) : active when 2 ERES81 communicate
(2) : to be connected to a 0Vdc pin to select "pre-recorded frames" : ERES fonctionnal mode.
pin not connected to select 'ERCP' functional mode.

MOUNTING SPECIFICATIONS

• Metallic environment:

Environment n°1: non metallic or in compliance with the sketch at right provided that $H > 100\text{mm}$ and $h = 0$ (for a 100mm metal-free clearance around the device in all directions).

Environment n°2: one ERES81 in environment n° 1, the other in compliance with the diagram at right provided that $H = 0$ and $h = 0$ (for a 100mm metal-free clearance around the device in all directions).



• Fixing:

Fixing will be carried out by 4 screws M6 (not provided).

ACCESSORIES (to order separately)

- ▶ 10-pins straight female plug for a \varnothing 8 to 12,5mm cable, ref: FFM SOU VGE1/10p
- ▶ 19-pins straight female plug for a \varnothing 13,5 to 18mm cable, ref: FFM SOU VGE1/19p
- ▶ 10-pins elbow female plug for a \varnothing 8 to 12,5mm cable, ref: FFM C SOU VGE1/10p
- ▶ 19-pins elbow female plug for a \varnothing 13,5 to 18mm cable, ref: FFM C SOU VGE1/19p

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