

## RAILWAYS Range

### Beacon

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# OMR81 C

## Commutable Beacon

### DESCRIPTION

Read only reprogrammable electronic beacon:

- Memory capacity : 2 bytes (standard) or up to 512bits.
- No battery.
- Radio frequency part is remote powering.
- Remote reading : 5 different codes
- Code of beacon activable by wayside commands
- General environment conditions according to EN 50125-3.
- Railways applications.

The Commutable Beacon can be read by a MOL81 type reader and can be programmed with a LPP1712 OMR or LPP1712 1354 OMR81C handheld reader/programmable tool.

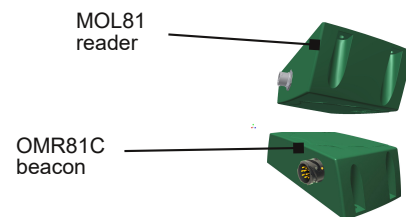


### FUNCTIONAL DATA

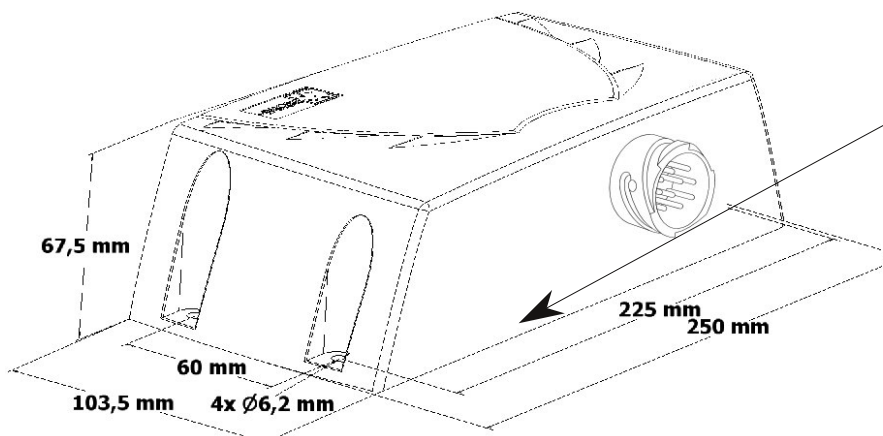
The OMR81C beacon has 3 inputs, each input corresponds to an activable code. The fourth code is activated when all inputs are disabled or when the connector is disconnected (code 'life') and the fifth code is activated when at least 2 inputs are enabled (code 'input fault').

The OMR81C beacon must be secured on sleeper between the rails in the transverse direction and the MOL81 reader mounted under the train in the transverse direction.

The distance between the higher face of the beacon and the lower face of the reader lies between 100mm and typically 700mm.



### DIMENSIONS



#### Marking :

Part number identification :  
OMR81 C

Serial number identification :  
yywwxxxxx-nnn-v

yy = year  
ww=week  
xxxxxx= manufacturing order  
nnn=serial number  
v=revision index

## TECHNICAL SPECIFICATIONS

	Min.	Typ	Max.	Unit
<b>Radio frequency communication</b>				
Carrier frequency		6,78		MHz
Reading range with MOL81 reader	refer to reader specifications to recommend reading range			-

### Memory

	EEPROM			
Technology	EEPROM			
Memory capacity		16	512	bits
Data rate		31,25		kbits/s
Time delay before availability (start-up time)			5	ms
Number of reading	Unlimited			
Data retention	40	200		years

### Environment

Operating temperature	-25 <sup>(1)</sup>		+70 <sup>(2)</sup>	°C
Storage temperature	-40		+85	°C
Electromagnetic compatibility (EMC)	EN 50121-4			-
Radiofrequency	EN 300330			-
Human exposure	EN 50364			-
Electrical safety	EN 60950			-
Shocks and vibrations mounting on sleeper	EN 50125-3			-
Fire and smoke	EN 45545 : R23 / HL2			-
Ingress protection rating	EN 60529 : IP67			-
Temperature cold test - dry heat test	EN 60068-2-1 & EN 60068-2-2			-
Temperature damp heat test EN 60068-2-30	+55°C insulation resistance >10MΩ			-
Humidity EN 50125-3	95% insulation resistance >10MΩ			-
Altitude air pressure : EN 50125-3	1 200			m
Solar radiation EN 50125-3	1 120			W/m <sup>2</sup>
Rapid temperature variations	EN 60068-2-14 : -25°C to +85°C			-
Low temperature storage	EN 60068-2-1 : -40 °C			-
Salt mist test	EN60068-2-11 : 500h			-
Guarantee of operation under water	Test under 200			mm
Guarantee of operation under ice	Test under 100			mm
Guarantee of operation under stones of ballast	Test under 100			mm
Guarantee of operation under mud	Test under 50			mm
Guarantee of operation under snow : fresh snow or sleet	Test under 150			mm
RoHS European directive 2011/65/EU and REACH European directive n°1907/2006	Compliant			-
RED European directive 2014/53/UE	Compliant			-

(1) : high derating of the reading range at -40°C

(2) : including the possible effects of altitude and solar radiation

### RAMS features

MTBF according to IEC62380 (informative data)	fixed installation : 1 140 000	h
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TECHNICAL SPECIFICATIONS

Enclosure

	Min.	Typ	Max.	Unit
Material		PA6		
Weight		2 500		g
Coating		PU		
Recommended tightening torque (4 screws)		5		N.m

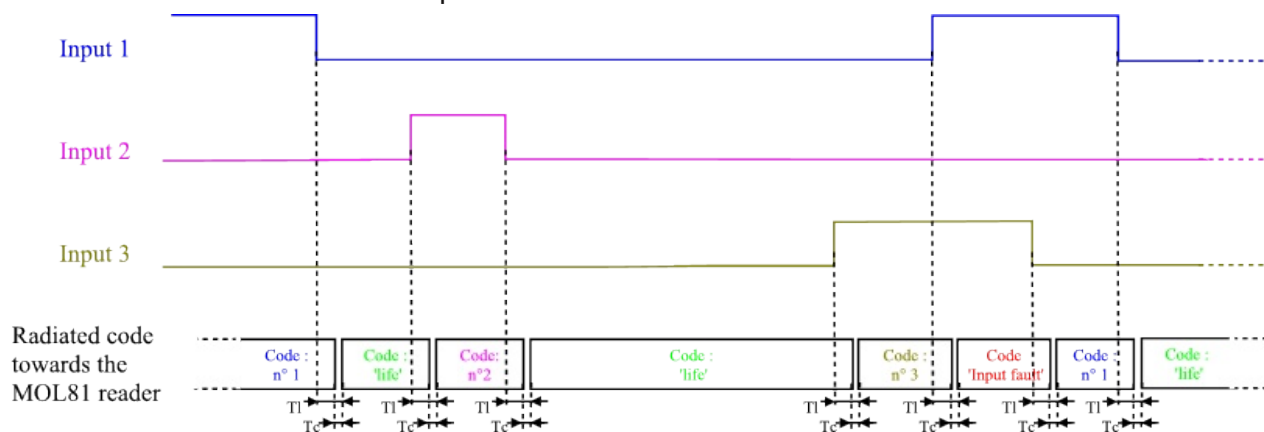
Activable digital Inputs

Low level '0' : $V_{IL}$			5	V
High level '1' : $V_{IH}$	10	24	35	V
Input current (each input)			50	mA
Protection against reversed polarity	protected			-
Activable level	high			-

Insulation Groups

n°1 : Input 1		-	-
n°2 : Input 2		-	-
n°3 : Input 3		-	-
n°4 : Body of connector, shield of cable		-	-
Insulation voltage between each group	2 000		Vrms
Insulation resistance between each group @500Vdc	1		GΩ

The radiated code is a function of the inputs



Tl : Latency time  
Tc: Commutation time

- Code 4 (or code 'life') is activated when all inputs are disabled
- Code 5 (or code 'input fault') is activated when at least 2 inputs are enabled
- Connector disconnected is equivalent to all inputs '0'
- The latency time Tl is at most 100ms
- The commutation time Tc is at most 7ms

Input 1	Input 2	Input 3	Radiated code
0	0	0	'life'
0	0	1	3
0	1	0	2
0	1	1	'Input fault'
1	0	0	1
1	0	1	'Input fault'
1	1	0	'Input fault'
1	1	1	'Input fault'

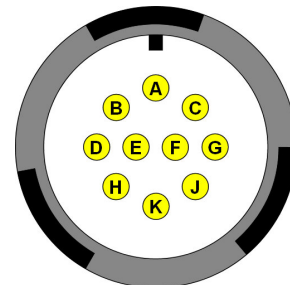


## CONNECTION

### • Cable

- 3x2 conductors.
- 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 1.5 mm<sup>2</sup>.
- Outer diameter of the cable: 8 to 12.5 mm.

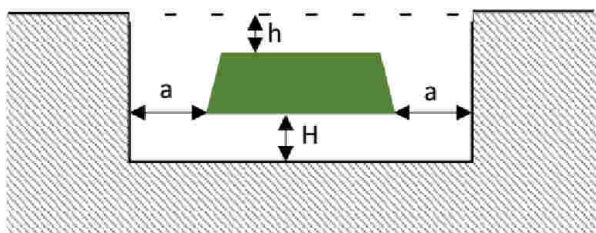
Pin	Assignment
A	Input 3 : 0/24V
B	Input 3 : 0V
C	nc
D	nc
E	nc
F	Input 1 : 0V
G	Input 1 : 0/24V
H	Input 2 : 0V
J	nc
K	Input 2 : 0/24V



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

## MOUNTING SPECIFICATIONS

### • Metal environment:



### The performance is function of metallic environment :

To keep the performance, put the OMR81C beacon on an area without metal with  $H > 10\text{cm}$ .

The device can be mounted directly onto a metallic area ( $H=0$ ) with a derating of reading range around 15 to 20%.

The OMR81 C beacon must be moved away from metal with at least  $a=10\text{cm}$ , in both directions.

Beyond this distance "a", the device can be recessed in metal, but not deeper than the height of the case ( $h=0$ ).

The OMR81 C beacon can be recessed in electrically insulating materials.

- **Fixing:** Fixing will be carried out by 4 screws (not provided),
- **Association of beacons OMR81 C**
  - The distance between each OMR81 C beacon has to be 2m minimum.
  - 2 beacons in the field of one reader could be not read.

## ACCESSORIES (to order separately)

- 10-pin female plug for  $\varnothing$  8 to 12,5mm cable :  
FFM SOU VGE1/10P for straight version and FFM C SOU VGE1/10P for elbow 90° version.