

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 section is remotely powered.
- Remote reading : 5 different codes
- Code of beacon activated by wayside commands
- Presence detection
- 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 handheld reader/programmable tool.

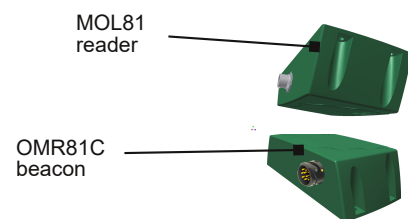


FUNCTIONAL DATA

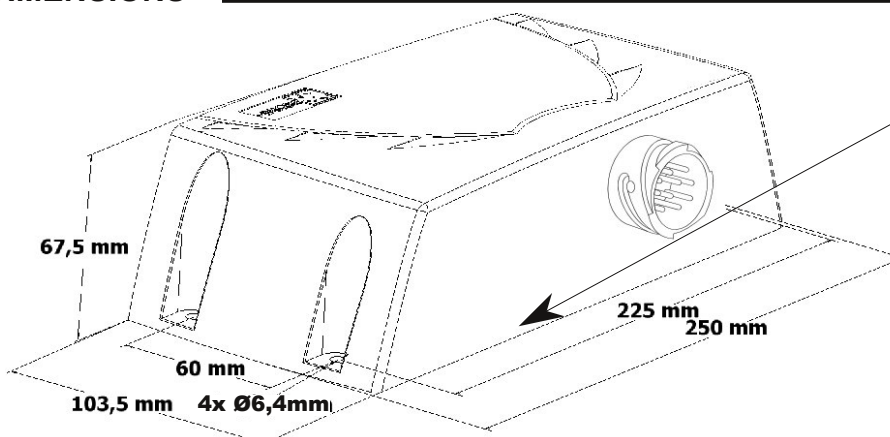
The OMR81C beacon has 3 inputs, each input corresponds to a code to be activated. The fourth code is activated when all inputs are disabled or when the connector is disconnected (code 'life') and the fifth code is activated when at least 2 inputs are enabled (code 'input fault').

The OMR81C beacon must be secured on sleeper between the rails transversely to direction of travel and reader MOL 81 also mounted transversely on underside of train.

The distance between the upper face of the beacon and the lower face of the reader must typically lie between 100mm and 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

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TECHNICAL SPECIFICATIONS

	Min.	Typ	Max.	Unit
Radio frequency communication				
Carrier frequency		6.78		MHz
Reading range with MOL81 reader	refer to reader specifications to recommend reading range			-

Memory

Technology	EEPROM			
Memory capacity		16	512	bits
Data rate		31.25		kbits/s
Time delay before availability (start-up time)			5	ms
Number of reads	Unlimited			
Data retention	40	200		years

Environment

Operating temperature	-25 ⁽¹⁾		+70 ⁽²⁾	°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 when mounted 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 ²
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

Digital Inputs for activation

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			-
Activation level	high			-

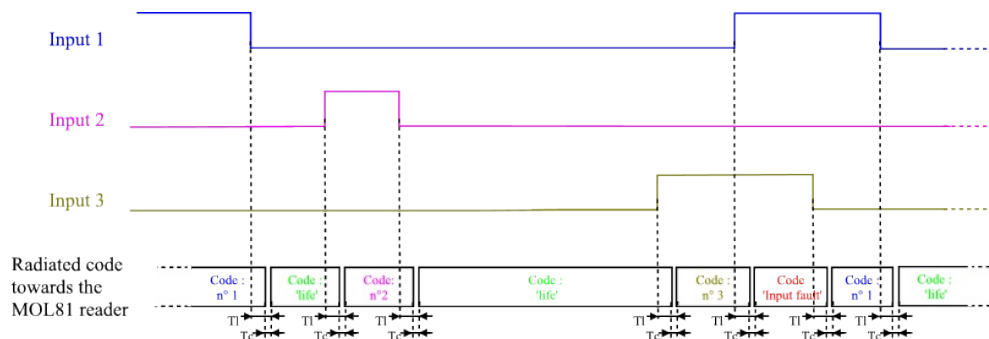
Presence detection

DC Voltage		24	35	V
Current			1	A

Insulation between Groups

n°1 : Input 1		-		-
n°2 : Input 2		-		-
n°3 : Input 3		-		-
n°4 : Presence detection		-		-
n°5 : Body of connector, shield of cable		-		-
Insulation voltage between each group	2 000			Vrms
Insulation resistance between each group @500Vdc	1			GΩ

The emitted 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

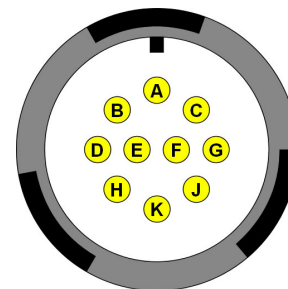
Input 1	Input 2	Input 3	Radiated code
0	0	0	'Life'
0	0	1	3
0	1	0	2
0	1	1	'Input fault'
1	0	0	1
1	0	1	'Input fault'
1	1	0	'Input fault'
1	1	1	'Input fault'

CONNECTIONS

• Cable

- 3x2 conductors.
- 1 overall shield; full 360° contact with the metallic connector housing.
- Conductors connected by crimping; wire cross section: 0.5 to 1.5 mm².
- Outer diameter of the cable: 8 to 12.5 mm.

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

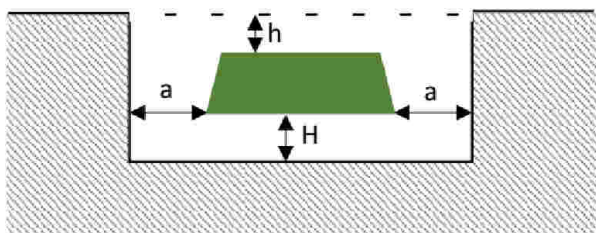


VGE1 type connector from Souriau
Pin side view of the male receptacle
or wiring side view of the female plug

(*) : Pins D and E are internally shorted. This can be used for a presence detection of the OMR81C beacon, a daisy chain configuration is possible.

MOUNTING SPECIFICATIONS

• Metal environment:



The performance is function of metallic environment :

To ensure maximum performance, the OMR81C beacon should be placed on a surface without metal, with $H > 10\text{cm}$. The beacon can be mounted directly onto a metallic surface ($H=0$) with a derating of reading range around 15 to 20%.

The OMR81 C beacon must be placed away from any 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 beacon can be recessed in electrically insulating material.

• Fixing:

Fixing will be carried out by 4 screws M6 (not provided), the OMR81C beacon has 4 metallic inserts (stainless steel type A4 - 316L) for fixing.

• Neighbouring OMR81 C beacons

- The distance between two OMR81 C beacons must be 2m minimum.
- 2 beacons in the same reader field will 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 right angle version.

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