RF Operational Description for Reader 8

GASNGO

Introduction

Reader 8 has two RF modules:

- 2.4GHz transceiver - communicates with the GSC
- 13.56MHz RFID reader - reads/writes passive RFID tag

2.4GHz Communication

The communication between the reader and the GSC is based on time slots; one second is divided into 128 time slots of 8 milliseconds each, therefore the reader should have the same “clock” as the GSC, and that is assured by the synchronization packet that the GSC sends to the reader.

Reader 8 has two operational power modes: Low power mode and Active mode.

Reader 8 is normally in low power mode in which it opens the transceiver to receive mode once every 10 seconds (this is a parameter that can be changed by the user), in active mode the transceiver is opened for receiving once every second.

The transceiver stays in receive mode for maximum one time slot (8 milliseconds) which is the first time slot of the second, and that is to get the synchronization packet from the GSC.

The reader switches to active mode only when needed:

- GSC command
- Out of synchronization
- The Nozzle is picked up – tilt sensor

If there is a command to be sent to the reader the GSC set a suitable flag in the SYNC packet, if this flag is set the reader restart the receive mode to be ready to receive the command and that is for maximum 5 time slots (40 milliseconds). In the command packet the GSC sets the time slot in which the reader should send the response.

The reader opens the transceiver to transmit mode in the time slot, which is set by the GSC, and sends the response. The time of transmission depends on the length of the response packet and the

quality of reception, the reader sends the same packet until the GSC receives it or for maximum 16 times.

13.56MHz RFID reader

The reader activates the RFID reader only if the GSC sends fueling commands to the reader.

After getting the command from the GSC the reader activates the RFID reader and starts searching for RFID tag in range.

If the command is to search for a tag and to read its data then:

- If there is no tag this session normally ends in about 39 milliseconds
- If there is a tag this session normally takes about 350 milliseconds

If the command is to sense a specific tag then:

- If there is no tag this session normally ends in about 56 milliseconds
- If there is a tag this session normally takes about 52 milliseconds