# PULSE Intel

## INTELLIGENCE IS POWER


# USER MANUAL

## https://tscloud.io

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Transmitter SOLUTIONS®

## Content

## Introduction

The Pulse Intel is developed for reliable remote control and monitoring of facilities. The device is quickly installed and easy to use.

**Areas of Use:**

- **Door or gate opening**
  With timer-controlled authorization control and logging
  Settings are configured via the Transmitter Solutions TS Cloud
- **Operational monitoring**
  With alerts via SMS, E-mail or IP packet to the Transmitter Solutions TS Cloud
- **Remote control**
  Start, stop or restart via the relay outputs
  Activated via SMS, telephone call or the Transmitter Solutions TS Cloud
- **Pulse counting**
  Checks running time at the connected facility
  Reading via SMS or the Transmitter Solutions TS Cloud

The Pulse Intel is configured remotely by using the Transmitter Solutions TS Cloud

**Battery-driven**

The device can be fitted with an internal battery backup that offers full functionality during a battery-operation time of approximately 24 hours.
The battery backup also offers a means of sending a power outage alert and a notification once the power supply is restored.

## Getting Started

1. **Make sure that a SIM card is installed in the device**
   You need a micro-SIM on which the PIN code control is deactivated; the subscription shall have a telephone number intended for voice and that allows data traffic. If the device has been delivered with a pre-installed Transmitter Solutions Roaming SIM then this is activated on the Transmitter Solutions TS Cloud. Read more about the SIM card and subscription in the section on installation and operation.

2. **Connect the sensor and power supply**
   All sensors with normally-open and normally-closed signals can be connected. DC voltage of up to 28V can also be used to activate the alert inputs; please note that the SMS Transceiver must have a common earth with the connected equipment if this alternative is used. The connection is described in the connection block description

3. **Apply voltage to the device and check to see that it logs on**
   Once voltage is applied to the device, the green LED first begins to blink slowly as the unit starts up. If the device is not programmed, it then transitions to its off state. The red LED shall blink once every three seconds when the device is logged in. Read more about it in the section on LED indicators

4. **Configure the device**
   Log into the Transmitter Solutions TS Cloud Check the signal strength and optimize it, if possible, by moving the antenna. Program the device. Once the programming is finished, the green LED will begin to shine steadily or it will double-blink depending on the settings you choose.

5. **Function check**
   Check to see that everything is working as expected.

# Installation

## SIM Card

**Transmitter Solutions roaming SIM**

The device can be delivered with a roaming SIM card installed. Roaming allows the device to log onto several operators' networks. This means in practice that the operator offering the best signal strength at the selected installation location is chosen automatically. If problems arise in communicating with one operator, the device automatically switches to an alternative network. The result is more reliable communication and increased security. Read more about activating the SIM card in the section on Start-up

**Spring-loaded SIM card holder**

To remove the SIM card, carefully press it slightly using a fingernail, the tip of a screwdriver or something similar. Let go and then the SIM card protrudes outward so that you can pull it out. You install the SIM card by inserting it into the holder as shown in Figure 1, carefully push it slightly further and then release it and the SIM card is locked in place. After installation, the card should rest in line with the end plate.

**Replacing the SIM**

It is possible to change to another SIM card. Kindly return the card that came with the device to Transmitter Solutions if it is not going to be used. The device uses a micro-SIM in which the PIN code control is switched off. The device requires the selected operator to support 2G. Please note that certain settings must be changed in the Transmitter Solutions TS Cloud for the change of SIM card to work.

**Shutting off the battery backup**

If the device is equipped with a battery backup, it will not shut off when the power supply is cut. Press the SIM card slightly inward and then release it. It will then be ejected from the SIM card holder. The device then senses this and then shuts down to conserve battery power. You can then push the SIM card into its place again. It starts up once the power supply is restored.

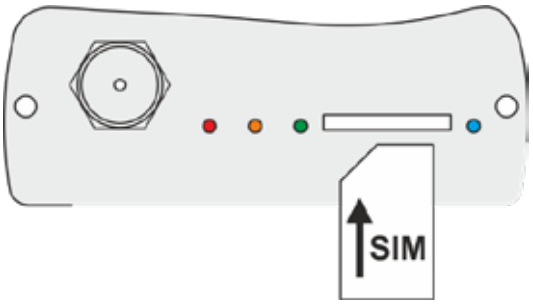


Figure 1 – Installing the SIM card

## Connections

**Pluggable screw terminal block**

The green screw terminal block is pluggable and can be removed by pulling it straight out. Take a screwdriver and carefully pry it out if it is stuck. Max cable size is  16 AWG. Make sure that no loose strands are sticking out of the side of the hole on the connection terminal.

**Connecting the antenna**

Connect the antenna to the antenna contact as shown in Figure 4. An antenna extension cable with an FME contact may be used as needed. We recommend that you keep the antenna cable as short as possible and use "Ultra Low Loss" cable. Check to make sure that the antenna is installed correctly in order to get the best signal strength. Don't forget to check the signal strength, either via the Transmitter Solutions TS Cloud or by sending a '?' as an SMS message (read more) to the device. Move the antenna as needed

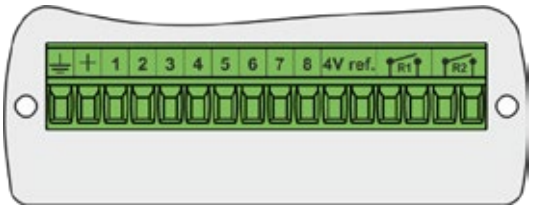


Figure 2 – Screw terminal block

| Connection | Description | Rating |
|---|---|---|
| ⏚ | Earth ground/minus/null | (Marked with a striped white line on the Transmitter Solutions transformer) |
| + | Input voltage | 9-28 V AC or DC |
| 1 | Input 1 [digital] with pulse counter function > 100 ms | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 2 | Input 2 [digital] | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 3 | Input 3 [digital] | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 4 | Input 4 [digital] | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 5 | Input 5 [digital] | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 6 | Input 6 [digital] | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 7 | Input 7 [digital] | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 8 | Input 8 [digital] | <3V DC = low ”0”, 3-28V DC = high ”1” |
| 4V ref | 4V reference voltage out for normally-open or normally-closed sensors | Max 50 mA |
| 4V ref | 4V reference voltage out for normally-open or normally-closed sensors | Max 50 mA |
| R1 | Relay output 1, normally-open function | Max 30V, 1A |
| R1 | Relay output 1, normally-open function | Max 30V, 1A |
| R2 | Relay output 2, normally-open function | Max 30V, 1A |
| R2 | Relay output 2, normally-open function | Max 30V, 1A |

Figure 3 – Terminal block description

## Installation

The device is installed with the integrated attachment lugs. These can also be removed by bending them back and forth a few times with pliers. The device has a robust aluminum casing; however, it should not be installed anywhere where it can be exposed to moisture or excessive humidity. The green terminal block’s earth connection is connected to the aluminum casing, which should be taken into account if the device, for example, is installed in a control panel where the earth ground is isolated from any other earth ground.

## LED Indicators

The LEDs indicate the functions independently of each other, not in combination. Read one LED at a time.

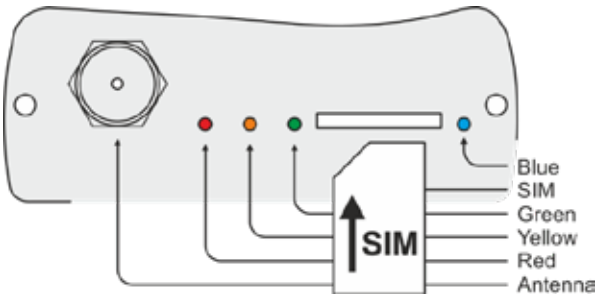


Figure 4 – LED indicators

| Red<br>The red LED shows the status of the GSM device | |
|---|---|
| **Turned off** | GSM turned off |
| **Blinking slowly** | Searching net, not logged in |
| **1 blink, 3 s pause** | Logged in on the GSM network |

| Yellow LED<br>The yellow LED shows events or error status | |
|---|---|
| **Turned off** | Normal operation |
| **Lit** | Sending of data or SMS in progress |
| **1 blink, 3 s pause** | Internal communication error CPU-GSM |
| **2 blinks, 3 s pause** | SIM card missing |
| **3 blinks, 3 s pause** | PIN code active |
| **4 blinks, 3 s pause** | Communication error with SIM card |

| Green LED<br>The green LED indicates operation mode | |
|---|---|
| **Turned off** | Switched off or not configured |
| **Blinking slowly** | Device starting up |
| **Blinking quickly** | Connected to the TS Cloud |
| **Lit** | Normal operation |
| **2 blinks, 3 s pause** | Normal operation. Access control activated |

| Blue LED<br>Blue LED shows battery status (optional accessory) | |
|---|---|
| **Turned off** | Normal operation |
| **Lit** | Battery charging in progress |
| **Blinking quickly** | Battery fault, replacement required |

## Start-up

### Activation of SIM card

The SIM card is operational upon delivery so that the device can be programmed and the function tested. The SIM card is then activated by logging in to the Transmitter Solutions TS Cloud

### Remove configuration via the Transmitter Solutions TS Cloud

All settings in the Pulse Intel are made via the Transmitter Solutions TS Cloud. A device is connected to a specific user account and only that account can gain access to the device and change the settings. The first time you register a device, you also need to create an account, there it is easy to add and administer more devices. You can gain access to everything from one location. For further information about TS Cloud controls, see the TS Cloud manual.

# Operation

## Basic Functions

### Alert transmission via SMS or E-mail

Up to 8 alerts and resets per input can be sent, either by SMS or E-mail.

### Filter time at alert inputs

A filter time can be set per input; alerts are first sent when the inputs have been in their new mode constantly until the filter time has run out. If the device is configured to send both alerts and resets, the same filter time applies to both modes.

### SMS commands

When the access control is activated, only users with administrator authorization can send commands via SMS to the device.

| Notification | Reply | Explanation |
|---|---|---|
| ? | IO STATE:<br>Motor=OK<br>Port=OK<br>Loop=OK<br>Photocell=OK<br>Emergency stop=OK<br>Open inlet=Not affected<br>Control box=Closed<br>Open signal=OK<br>Power supply=OK<br>Open pulse GSM=Off<br>-=- | The reply shows the status of the inputs and outputs<br>The content is based on that which is stated in the Transmitter Solutions TS Cloud.<br>Filtered values are shown, change is first made when the filter time for the input in question has run out. |
| ?? | STATUS<br>In1=1<br>In2=0<br>In3=0<br>In4=1<br>In5=1<br>In6=0<br>In7=1<br>In8=0<br>R1=OFF<br>R2=OFF<br>Ext power=ON<br>Signal=15 (31)<br>SW=X.XX | The reply shows the input and output logic levels, as well as the status of the power supply.<br>The signal strength has a value between 0 and 31, where 31 is the best signal strength. For reliable functioning, the signal strength should be above 14.<br>SW shows which software version the device features.<br>Filtered values are shown, change is first made when the filter time for the input in question has run out. |
| R1=ON<br>R2=ON | None | The notification activates relay 1 (R1) or relay 2 (R2), which creates a connection at the relay output. |

| | | |
|---|---|---|
| R1=OFF<br>R2=OFF | None | The notification activates relay 1 (R1) or relay 2 (R2), which breaks the connection at the relay output. |
| R1=60<br>R2=60 | None | The notification activates relay 1 (R1) or relay 2 (R2) for 60 seconds.<br>Time can be stated between 1 and 65,000 seconds |

**Call-activated relay (open function)**

A relay output can be configured to close when an incoming call is being detected.

**Access control (authorization control)**

Access control is switched off upon delivery and everyone is then authorized to control it.
When the function is activated, authorization can be given a telephone number at two levels.

User authorization: The user can call the device to activate a relay output during a predetermined time.
Administrator authorization: The administrator can both call and send commands to the device via SMS.

Authorization can be limited to certain days or times through settings in the Transmitter Solutions TS Cloud.

## Optional Functions

**Pulse counter function***

Input 1 can be set to count pulses. The input has two counters, one that counts the total and one that counts intervals. The reading can be done via the Transmitter Solutions TS Cloud or SMS. The interval counter can also be reset, for example, when service is being performed. Alerts can be sent when the interval counter has reached 75%, 100% and 125%.

**Heartbeat**

The device checks its connection with the Transmitter Solutions TS Cloud every day and takes corrective measures if the contact has been broken.
The Transmitter Solutions TS Cloud monitors whether it has heard from the device and generates an alert if it has not.

**Battery backup**

The Pulse Intel can be supplied with an optional battery backup with a battery time of approximately 24 hours. With the battery backup, the device has full function during battery operation and alerts can even be sent when the power supply is cut off and when it is restored. It is recommended that the backup battery be replaced once every 3 years.

## Technical Specifications

| | |
|---|---|
| Input voltage: | 9-28 V AC or DC |
| Power consumption, nominal: | 15mA @ 24V |
| Power consumption, max (burst): | 500mA @ 24V |
| SIM card type: | Micro-SIM |
| Number of inputs: | 8 digital inputs, max 28V DC |
| Number of outputs | 2 outputs with normally-open relay functions, max 30V, 1A |
| Outputs for reference voltage: | 2 outputs, 4V max 50 mA |
| Ambient temperature during operation: | -22 – 158 F |
| Casing: | Robust aluminium casing, not IP or NEMA rated |
| Dimensions: | 3,65 x 2,7 x 1 in |
| Weight: | 3,9 oz not including battery backup |
| Maximum cable area in terminal block: | 16 AWG |