Improve X iTX

Product Specification Catalogue

The Improve X (ITX) Intelligent Twin Reader Terminal is the second generation of the highly successful Improve X iTX. Using the RS485 Bus Connection, the Improve X iTX works within the Improve X range of Access Control Systems, as well as within OEM applications.

The Improve X iTX is capable of working with a variety of Improve X Hardware. This includes the Multi-discipline Reader Range, the Wiegand Reader Range, the Multi-mode Remote Range as well as various Third-party Barcode and Magstripe Readers. In applications that require extended range, you can connect the Improve X (IR) Infrared Receiver and the Improve X RF 4-Channel Receiver to the Improve X iTX. Each Improve X iTX is designed to be used with up to two Readers or Receivers.

Major memory improvements allow the Improve X iTX to store up to 10 000 Tags and 10 000 Buffered Transactions per channel as well as providing the added benefit of off-line validation. In this optional mode the Improve X iTX allows access to Tags present in the Terminal’s transaction buffer. This is valuable should communications between the Improve X iTX and the Controller disrupt.

Other new features include a Software Utility which allows you to upgrade the Terminal while installed on site with zero down-time.

Key Features

General

- Cost effective solution that fits seamlessly into legacy Systems.
- Support for the following Terminal Communication options:
  - Ethernet—Door Controllers (XRT920 and IPS921 only) connect to your chosen System Controller using the existing IP infrastructure.
  - RS485—an ultra reliable method (not affected by network problems) of connecting to your chosen System Controller.
- Onboard intelligence means the Terminal can run off-line from the Controller.

General (Continued)

- Interfaces to the following Improve X Readers:
  - Improve X Multi-discipline Readers.
  - Improve X Wiegand Reader.
  - Improve X Multi-mode Readers.
- Offers full Wiegand Support.
- Interfaces to the Improve X IR, Improve X RF, and Third-party Wiegand Readers.
- Connection to up to two Readers or Third-party Devices at each Improve X iTX. Allows Relaxed or Full Anti-passback (APB) access on a single Door or single entity on two Doors.
- End-of-line (EOL) Sensing on Door Open Sensor (DOS) Inputs.
- Operation from power inputs in the range 10 V to 30 V DC.
- An excellent user interface consisting of 14 LED “Diagnostic Indicators”.
- Onboard memory for off-line Redundancy supporting:
  - Up to 10 000 Tags.
  - Up to 10 000 buffered transactions per channel.
- Two 10 A independent single-pole, double-throw (SPDT) Relay Outputs that allow you to interface to door strikes, magnetic locks and other third party devices (for example alarm panels or lighting).
- Four Digital Inputs including two Door Open Sensor (DOS) and two Request to Exit (RTE) Inputs.
- A Software utility to upgrade Firmware while installed on-site, without removal of the Terminal and with zero down-time.

Power Supply Combo (IPS920 and IPS921)

- A 3 Amp Switch Mode Power Supply providing 13.8 V DC to charge a 12 V T Ahr Sealed Lead Acid Battery.
- Nominal output voltage of 13.8 V DC with a fully charged Battery.
- Automatic switch-over to Battery operation on Mains Failure.
- Compact, Mild Steel Cabinet, accommodating the Power Supply, Controller or Terminal and a Sealed Lead Acid Battery.
- Two 13.8 V Power Outputs for powering the Terminal and, for example, a lock. Together these Outputs have a maximum power output of 2 A (max) continuous at 13.8 V DC.
- Five Quick Click Glands for easy wiring.
- Fuses on mains in and low voltage output.

Use in an IXP220 or ImproNet System

- Relay functions are user configurable.
- Digital Inputs are user configurable and can perform specific tasks such as:
  - Door Open Sensing.
  - Request to Exit.
  - Scanner Inhibit.
  - Alarm Interface.
  - Action Request.

Physical Specifications

XRT9X0 and XRT920 Plastic Housing

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>128 mm (5 in.)</td>
</tr>
<tr>
<td>Width</td>
<td>166 mm (7 in.)</td>
</tr>
<tr>
<td>Height</td>
<td>55 mm (2 in.)</td>
</tr>
<tr>
<td>Approximate Weight</td>
<td>314 g (11 oz.)</td>
</tr>
</tbody>
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**Improve X (ITX) Intelligent Twin Reader Terminal**

**XRT910-0-0-GB-XX**  **XRT920-0-0-GB-XX**  **IPS921-0-0-GB-XX**
IP920 Power Supply Combo
Length : 305 mm (12 in).
Width : 295 mm (11 in).
Height : 77 mm (3 in).
Approximate Weight : 3 kg (7 lb).
Cabinet : Mild Steel.
Colour : Black.

Environmental Specifications
Operating Temperature : -25°C to +60°C (-13°F to +140°F).
Storage Temperature : -40°C to +80°C (-40°F to +176°F).
Humidity Range : 0 to 95% relative humidity at +40°C (+104°F) non-condensing.

Approvals
CE Approval : EN301 489-1 and EN301 489-3.
FCC Approval : Pending.

Dust & Splash Resistance (XRT910) : Designed to work in an indoor (dry) environment similar to IP40. The Terminal is not sealed against water.
Dust & Splash Resistance (IPS920) : Designed to work in an indoor (dry) environment similar to IP20. The Power Supply Combo is, therefore, not sealed against water.

Drop Endurance : 1 m (3.28 ft) drop (in packaging).

Electrical Specifications
Power
XRT910 and XRT920 Plastic Housing
Input Voltage : 10 V DC to 30 V DC, polarity sensitive.
Power Requirements
12 V DC with no peripherals connected and relays off : 75 mA, 0.90 W
24 V DC with no peripherals connected and relays off : 40 mA, 0.96 W
Permissible Input Supply Ripple Voltage (Max) : 1 V p-p at 50 Hz.
Power Input Protection : Reverse polarity, over-voltage and over-current protection are provided on the Terminal.

IPS920 and IPS921 Power Supply Combo
The Power Supply Combo includes a 3 A Switch Mode Power Supply which provides power for the (optional) internal unit and for charging the (optional) backup Battery. As the Power Supply Combo needs no more than 1 A, you may power extra devices using up to 2 A continuous current from the provided connector block. DO NOT exceed this 2 A limit on continuous current draw. Devices with a high in-rush current demand, such as certain maglocks and other electromechanical devices, can momentarily draw more than 3 A. The Power Supply then effectively shuts down as directed by its built in protection as exceeding the 3 A rating is considered a short-circuit. Overcome this by installing the recommended 12 V 7 Ahr Battery to help supplement the in-rush current such a device may draw on activation.

Power Input
Input Voltage : 85 V AC to 265 V AC at 50/60 Hz.

Power Output
Output Voltage (Mains Power On) : 13.8 V DC ±0.3 V DC.

Output Current : 2 A continuous (Power Output Terminals).

Battery
Type : 12 V Sealed Lead Acid Battery, 7 Ahr (Max).
Length : 151 mm (6 in) (Max).
Width : 65 mm (3 in) (Max).
Height : 99 mm (4 in) including the Terminals (Max).
Charge Voltage : 13.8 V DC.

The following specifications are common to all models of the ImproX iTRT:
Relay Power Requirements : An additional ~0.4 W per Relay used.
Real Time Clock Backup Battery (RTC)
Battery Type : 1 x 3 V, CR2032, Lithium cell battery.
Battery Life : 1 Year with power OFF. 5 years with Power ON. 5 years Storage with Battery Tab in place.

Terminal Bus
Ethernet Port (XRT920 and IPS921 Only)
Ethernet Port : Standard Ethernet RJ45 connector. 10/100 Base T, half or full duplex.
RS485 Terminal Bus
Electrical Interface : RS485.
Baud Rate : 38 400.
Data Format : 8 data bits, no parity, 1 stop bit.
Communications Protocol : ImproX Secure Communications Protocol.
Line Termination : Provision is made for line termination.

Reader Options
Reader 1 Wiegand and Reader 2 Wiegand allow connection to the following hardware: ImproX Multi-discipline Readers, ImproX Multi-mode Remotes, Wiegand Readers, ImproX (IR) Infrared Receiver or the ImproX RF 4-channel UHF Receiver. The function is selectable via the DIP-switches.

Power Output : 12 V DC and 5 V DC (selectable) at maximum 200 mA.
Modes Supported : Tag + PIN-code or Reason Code.
Baud Rate : 9 600.
Data Format : 8 data bits, no parity, 1 stop bit.
Electrical Interface : TTL Full Duplex.

Digital Inputs
General
Input Type : 2 Dry-contact inputs with End-of-line (EOL) Sensing and 2 Dry-contact inputs without End-of-line (EOL) Sensing.
Detection Resistance Range : < 2 kOhm.
Protection Range : +15 V continuous.

Relays
Relay Output : 2 Relays, Form C, each with NO, COM and NC contacts.
Contact Ratings : 10 A at 28 V DC, 5 A at 220 V AC, 10 A at 120 V AC.
Operations: 100 000 Minimum.
Power Consumption (per Relay): ~ 0.4 W.

**Processor**

Type: 32-bit ARM7TDMI operating at 72 MHz.
Total RAM: 58 K Byte.
Flash: 256 K Byte.

**Other**

Anti-tamper Switch (XRT910 and IPS920): 1 Internal Switch.

**Factory Defaults**

Baud Rate: Factory-set to 38 400.
Mode: Receive (Slave Mode).

**User Interfaces**

LED Status and Diagnostic Indicators

Status LED: Continuous Red.
Upgrade Mode: Flashing Red (Steady).
RS485 Communications Failure: Flashing Red (Intermittent).
Relay [2]: Continuous Red on activation of the Relay.
Relay [1]: Continuous Red on activation of the Relay.
Reader 2, RTE [2]: Continuous Green on detected contact closure.
Reader 2, DOS [1]: Continuous Green on detected contact closure.
Reader 1, RTE [2]: Continuous Green on detected contact closure.
Reader 1, DOS [1]: Continuous Green on detected contact closure.
RS485 RX: Flashing Green as per incoming data.
RS485 TX: Flashing Red as per outgoing data.

Ethernet LEDs (XRT920 and IPS921 Only)

Ethernet Activity: Flashing Red LED.
Ethernet Speed: Continuous Red for 100 Mbps (Default) Off for 10 Mbps.
Ethernet Link: Continuous Red on connection to network.

**Related Information**

For extra information relating to this product refer to the:

- ImproX iTRT Hardware Installation Manual (XRT300-0-0-GB-XX).

**Ordering Information**

Order the ImproX iTRT using the following Part Numbers:

- IPS920-0-0-GB-XX: ImproX IPS containing an ImproX (iTRT) Intelligent Twin Remote Terminal.
- IPS921-0-0-GB-XX: ImproX IPS containing an ImproX (iTRT) Intelligent Twin Remote Terminal with Ethernet.

** Warranty Details**

CAUTION: We reserve the right to nullify the product’s warranty where you have not properly installed the Metal-oxide Varistors.

This product conforms to our Warranty details on www.impro.net.
Figure 1: ImproX iTRT Overview