impro®
Technologies

OMNI-SCAN
125 kHz PASSIVE TAG READER
INSTRUCTIONS FOR USE

MODEL : OMS-900-1-0-GB-XX

INTRODUCTION

Omni-Scan is a multi-purpose OEM passive tag reader designed to fit seamlessly into new and existing access control systems which operate with RS232, RS485 or TTL protocols.

Omni-Scan is compact, so that it can be fitted into existing enclosures. The unit is designed to provide an adequate tag reading range.

Omni-Scan communicates using the Impro Uni-Scan protocol, but does not permit the reception of commands.

SPECIFICATIONS

PHYSICAL SPECIFICATIONS

Dimensions [Rectangular] : Length = 55 mm;
Width = 36 mm;
Height = 13 mm (with terminal blocks),
7 mm (without terminal blocks).

Dimensions [Circular] : Diameter : 55 mm, height as above.

Weight : 16 g.

ENVIRONMENTAL SPECIFICATIONS

Temperature

- **Operating** : -20^0 C to $+70^0$ C (-4^0 F to $+158^0$ F)
- **Storage** : -25^0 C to $+80^0$ C (-13^0 F to $+176^0$ F)

Humidity Range : 0 to 80% non-condensing.

ELECTRICAL SPECIFICATIONS

Power Input

- **Voltage** : 9 V to 16 V DC
- **Current** : 60 mA

RF Operating Frequency : 125 kHz.

		RS485	RS232	TTL
Communication Ports	:			
• **Baud Rate**	:	9600	9600	9600
• **Data Format**	:	8 data bits, 1 stop bit, no parity bit.	8 data bits, 1 stop bit, no parity bit.	8 data bits, 1 stop bit, no parity bit.

Protocol : Uni-Scan protocol (no commands can be received) (see page 3 for details)

Compatible Tag Types : Impro Standard Tags, Impro Slim Tags, Impro Omega Tags and Impro Pico Tags (125 kHz).

Range : 50 - 140 mm nominal (see Table 1)

International Standards : The unit complies with CE requirements.

OPERATOR INTERFACE

Status Indication : Single bi-colour (red/green) LED

TAG TYPE	TYPICAL READING RANGE
Impro Standard credit card tag [125 kHz]	100 mm to 140 mm
Impro Standard round button tag [125 kHz]	70 mm to 100 mm
Impro Slim credit card tag	90 mm to 120 mm
Impro Slim teardrop tag	70 mm to 90 mm
Impro Pico Tag	50 mm to 70 mm

Table 1 : Tag reading ranges

INSTALLATION INFORMATION

MOUNTING THE UNIT

The unit is designed to fit into either a rectangular or circular opening. The minimum dimensions of this opening can be determined from the physical specifications given.

For rectangular openings the unit should be secured using the four 2.5 mm diameter holes provided. If this is not possible, an adhesive or a polyurethane potting compound should be used.

To mount the unit in a circular opening with a minimum diameter of 55 mm, break the corners off the PCB using a pair of small pliers and secure using an adhesive or a polyurethane potting compound.

NOTE : *Mounting the unit in a metal enclosure will result in a decrease in reading range.*

CABLING

The wiring diagram shown in Figure 1 indicates the connections required for the unit.

Power Connection

The power connections should be made using cable with a minimum conductor cross-sectional area of 0.2 mm^2. It is important to note that voltage drops may occur over long cable lengths if the cross-sectional area is insufficient (low current cable), and the voltage at the unit may then be less than the minimum required.

RS485 Connection

The RS485 connections should be made using a shielded, stranded, 2-core (twisted) screened cable, with a minimum conductor cross-sectional area of 0.2 mm^2. The maximum length of the cable should not exceed 500 metres, although satisfactory operation can be obtained over cable lengths of up to 1 000 metres under favourable conditions. To reduce reflections on the line, the line should be terminated at the unit using a resistor value of 100 ohms to 1 000 ohms connected across the A and B lines as shown in Figure 1.

RS232 Connection

The RS232 connections should be made using a stranded 2-core (twisted-pair) cable, with a minimum conductor cross-sectional area of 0.2 mm^2. The maximum length of the cable should not exceed 20 metres.

In electrically noisy environments, a screened cable may be used, with the screen grounded as shown in Figure 1.

TTL Connection

The TTL connection is made using the A-line on the RS485 port as the TTL data line, and the (ETH)-line on the RS485 port as the TTL ground. This connection should be made using a stranded 2-core (twisted-pair) cable, with a minimum conductor cross-sectional area of 0.2 mm^2. The maximum length of the cable should not exceed 5 metres.

SET-UP INFORMATION

IDLE STATE

When the unit is idle, with no tag within range, the LED is permanently red.

MODES OF OPERATION

The unit is capable of operating in two distinct modes, namely the Single Tag Reporting Mode and the Continuous Tag Reporting Mode. The user can select the mode required for the particular installation.

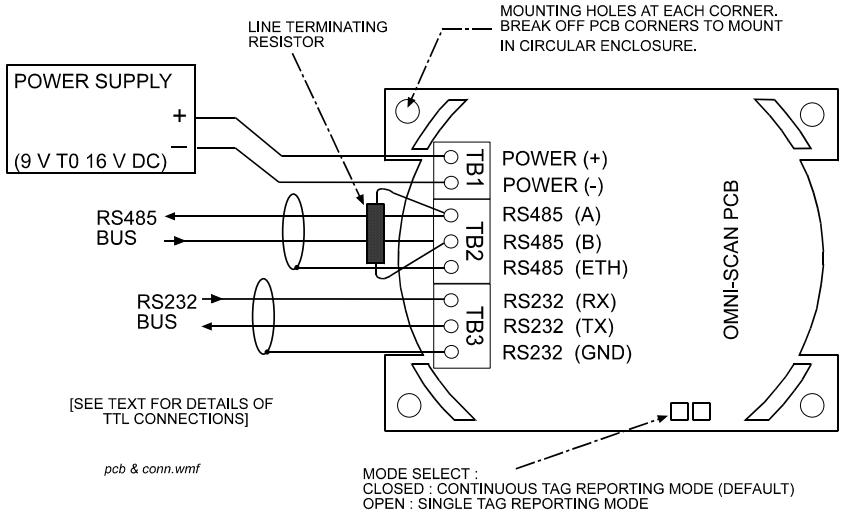

Figure 1 : Omni-Scan Reader terminal block connections

Single Tag Reporting Mode
In this mode (user-selectable), once a tag has been read it must be moved out of range for a minimum of 2 seconds before the tag can be read again. When a tag is brought within range, the LED indicator switches from red to green for a period of 0.5 seconds, and then reverts back to red. The tag code is reported only once to both the RS232 and RS485 ports.

Continuous Tag Reporting Mode
In this mode (user-selectable), the LED indicator switches from red to green when a tag is brought within range, and remains green until the tag is moved out of range, when it reverts to red. The tag code is reported continuously to both the RS232 and RS485 ports while the tag is within range.

This mode is the default set at the factory. The user can select the Single Tag Reporting Mode by removing the solder link as indicated in Figure 1.

Uni-Scan Report Format
The data stream is ASCII, and the report format varies according to the Tag type as described below.

Impro Standard and Slim-Tag report format
Impro Standard and Slim-Tags are reported in 15 bytes **with no spaces** :

<10 digit number> <check digit> CR CR LF
Example : #0289644556 9 CR CR LF
The check digit is the sum of the preceding digits modulus 10.

APPLICABILITY OF THIS MANUAL
The last two digits of the standard Impro stock code indicate the issue status of the item concerned. This manual is applicable to Omni-Scan Reader codes OMS-900-1-0-00 onwards. The next issue of this manual will determine the final equipment issue to which this issue is applicable.

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