User's Guide

IND360legacy

Weighing Terminal

METTLER TOLEDO

IND360legacy Weighing Terminal

METTLER TOLEDO Service

Essential Services for Dependable Performance of Your IND360legacy Weighing Terminal

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use of your new equipment according to this Manual and regular calibration and maintenance by our factory-trained service team ensures dependable and accurate operation, protecting your investment. Contact us about a service agreement tailored to your needs and budget. Further information is available at www.mt.com/service.

There are several important ways to ensure you maximize the performance of your investment:

1. **Register your product**: We invite you to register your product at www.mt.com/productregistration so we can contact you about enhancements, updates and important notifications concerning your product.
2. **Contact METTLER TOLEDO for service**: The value of a measurement is proportional to its accuracy – an out of specification scale can diminish quality, reduce profits and increase liability. Timely service from METTLER TOLEDO will ensure accuracy and optimize uptime and equipment life.
    a. **Installation, Configuration, Integration and Training**: Our service representatives are factory-trained, weighing equipment experts. We make certain that your weighing equipment is ready for production in a cost effective and timely fashion and that personnel are trained for success.
    b. **Initial Calibration Documentation**: The installation environment and application requirements are unique for every industrial scale so performance must be tested and certified. Our calibration services and certificates document accuracy to ensure production quality and provide a quality system record of performance.
    c. **Periodic Calibration Maintenance**: A Calibration Service Agreement provides on-going confidence in your weighing process and documentation of compliance with requirements. We offer a variety of service plans that are scheduled to meet your needs and designed to fit your budget.
    d. **GWP® Verification**: A risk-based approach for managing weighing equipment allows for control and improvement of the entire measuring process, which ensures reproducible product quality and minimizes process costs. GWP (Good Weighing Practice), the science-based standard for efficient life-cycle management of weighing equipment, gives clear answers about how to specify, calibrate and ensure accuracy of weighing equipment, independent of make or brand.

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FCC Notice

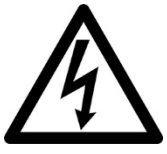
This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her expense.

- Declaration of Conformity is available at http://glo.mt.com/global/en/home/search/compliance.html/compliance/.

Warnings and Cautions

- READ this manual BEFORE operating or servicing this equipment and FOLLOW these instructions carefully.
- SAVE this manual for future reference.

	**⚠ CAUTION** **THE IND360 IS INTENDED TO BE USED FOR PROCESS CONTROL AND IS NOT APPROVED AS A SAFETY COMPONENT. WHEN USED AS A COMPONENT PART OF A SYSTEM, ANY SAFETY CIRCUITS MUST BE INDEPENDENT OF THE IND360 AND REMOVE POWER FROM THE IND360 OUTPUTS IN THE EVENT OF AN EMERGENCY STOP OR EMERGENCY POWER DOWN.**
	**⚠ CAUTION** **THE IND360 IS NOT INTRINSICALLY SAFE! DO NOT USE IN HAZARDOUS AREAS CLASSIFIED AS DIVISION 1, ZONE 0, ZONE 20, ZONE 1 OR ZONE 21 BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. FAILURE TO COMPLY WITH THIS WARNING COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.**
	**⚠ CAUTION** **IND360 MUST NOT BE INSTALLED INTO A DIVISION 2 OR ZONE 2/22 ENVIRONMENT.**
	**⚠ CAUTION** **DO NOT ACTIVATE POWER OVER ETHERNET (POE) ON ETHERNET SWITCHES ON THE IND360 NETWORK. ACTIVATING POE MAY RESULT IN DAMAGE TO THE IND360.**
	**⚠ WARNING** **WHEN THIS EQUIPMENT IS INCLUDED AS A COMPONENT PART OF A SYSTEM, THE RESULTING DESIGN MUST BE REVIEWED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL COMPONENTS IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.**
	**⚠ CAUTION** **DO NOT INSTALL, DISCONNECT OR PERFORM ANY SERVICE ON THIS EQUIPMENT BEFORE POWER HAS BEEN SWITCHED OFF AND THE AREA HAS BEEN SECURED AS NON-HAZARDOUS BY PERSONNEL AUTHORIZED TO DO SO BY THE RESPONSIBLE PERSON ON-SITE.**
	**⚠ WARNING** **ONLY THE COMPONENTS SPECIFIED ON THE IND360 DOCUMENTATION CAN BE USED IN THIS TERMINAL. ALL EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS DETAILED IN THE INSTALLATION MANUAL. INCORRECT OR SUBSTITUTE COMPONENTS AND/OR DEVIATION FROM THESE INSTRUCTIONS CAN IMPAIR THE SAFETY OF THE TERMINAL AND COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.**
	**⚠ WARNING** **BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT AND/OR BODILY HARM.**

⚠ CAUTION

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THE TERMINAL. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

NOTICE

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Disposal of Electrical and Electronic Equipment

In conformance with the European Directive 2012/19/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

Contents

1 Introduction

This manual details the difference in settings and functionality between the IND360base and the IND360legacy weighing terminal. Only areas of difference are covered. To simplify comparison between the IND360legacy and the IND360, this manual's chapter and section structures parallel those of the base **IND360 User's Guide**.

The IND360legacy provides much of the functionality of the IND131/IND331 weighing terminals to offer backward compatibility. It is designed to support a seamless transition to next-generation indicators without the need to change the PLC programming.

Features include:

- Large color operator display and network status LEDs.
- Web interface for service and monitoring.
- Integrated logging of errors and configuration changes.
- Backup, restore and cloning of device configuration through web interface.

1.1. Special Notes on Migration

The IND360legacy is mechanically compatible with IND131/331. There is no need to drill new holes into the control cabinet in order to mount the larger IND360 display.

Compared to IND131/331, the following functionality has been replaced by other solutions in IND360:

- SD card (Replaced by a web interface)
- MT-SICS command interface (Now supported by IND360base)
- Legacy filling application (Now supported by IND360fill/dose)

The following functionality previously supported by IND131/331 is **not** supported by IND360:

- Connectivity to Modbus TCP
- Connectivity to DeviceNet, ControlNet and CCLink
- Toledo Continuous Protocol
- Serial port printers
- While solid state digital inputs are supported by IND360legacy, the dry contact relay option is no longer supported

For new applications and setups, the IND360base or an IND360 with an application are better choices. This new generation of indicator offers high-speed communication, integration within minutes, and connectivity to smart sensors.

1.2. IND360legacy Overview

IND360legacy Features

- Scale connection:

  Single analog load cell scale base

  A network of up to 8 350Ω or 20 1kΩ analog load cells

  Not supported: smart sensors like POWERCELL and Precision
- Supported languages: English, Chinese.
- Network and system status LEDs (Red, Orange, Green)
- Legal for Trade lockout switch
- Weighing functions e.g. zero, tare, clear
- Web interface for parameter configuration
- OLED (DIN version) or TFT (Panel/Harsh version) display for easy local configuration
- 3-level user security
- Real-time clock with battery backup
- CalFree™ Adjustment of strain gauge scales without test weights
- Comparison with IND131/IND331-specific functionality:
  - Connectivity to PROFINET, Profibus DP, EtherNet/IP and Modbus RTU automation buses using the IND131/IND331 protocols and their device description files. Device description files are not certified in combination with the IND360legacy device.
  - Acyclic communication is not available for EtherNet/IP or PROFINET.
  - Up to 3 comparators can be defined.*
  - 4-20 mA analog output and digital I/O options are available.*

    * Rate and Absolute rate are not supported.

1.6. Model Identification

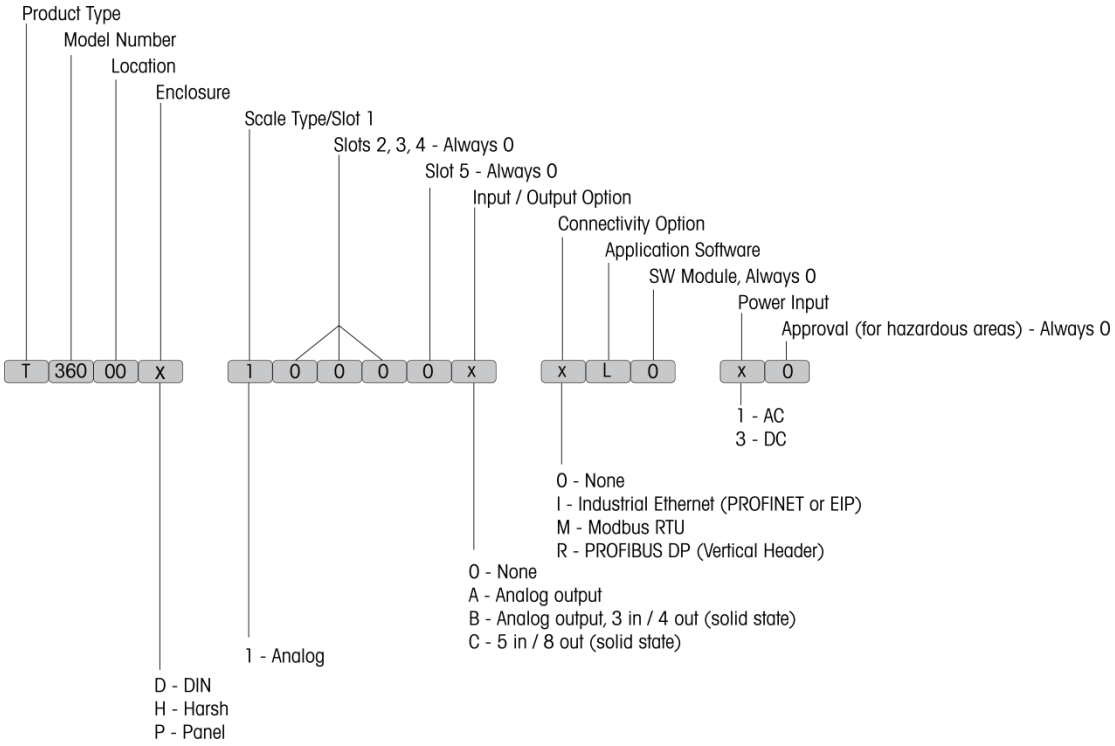


Figure 1-1: IND360legacy SCK Identification

3 Configuration

3.6. Application

3.6.2. Comparators

The IND360legacy supports up to three comparators. Comparator setup is the same as for the IND360base.

3.6.3. Discrete I/O

3.6.3.1. Discrete Inputs

The Discrete I/O option is configured as it is in the IND360base but includes different options. Available input options are indicated in Table 3-1.

Table 3-1: Discreet I/O Inputs

Index	Function	Function description	Trigger
1	None	None	NA
2	Clear Tare	Clear Tare	Pulse
4	Keypad Disable	On main screen, pressing the keys has no effect[1]	Level
5	Silence Alarm	Silence Alarm on DIO output.	Level
6	Tare	Tare	Pulse
7	Zero	Zero	Pulse

1 When Keypad Disable is activated while in the Configuration menu, this setting becomes active once the operator returns to the main screen.

3.6.3.2. Discrete Outputs

Available output options are indicated in Table 3-2

Table 3-2: Discreet I/O Outputs

Function	Function description
None	No output
Center of Zero	Indicates that the scale is at the center of calibrated zero
Comparators 1 to 3	Sends results of the comparator's calculation
Alarm	Triggers alarm
Motion	Indicates that the scale has met the criterion for motion
Net	Sends current net weight
Over Capacity	Indicates that the scale is above its calibrated capacity

Function	Function description
Under Zero	Indicates that the scale output is below calibrated zero

3.8. Communication

The IND360legacy uses the same device description files as the IND131/IND331, but in this application the combination of device and files is not certified. The data format is backward compatible.

3.8.3. EtherNet/IP

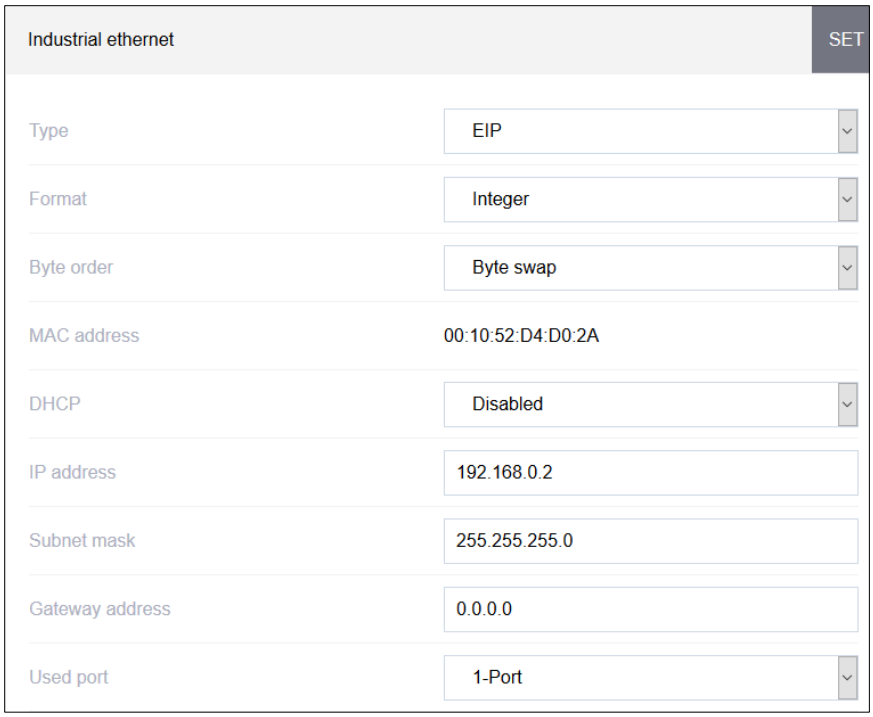


Figure 3-1: Web Interface EtherNet/IP Screen

EtherNet/IP setup differs from the IND360base in two parameters: **Format** and **Used Port**.

3.8.3.1. Format EtherNet/IP

Three data formats are available:

Integer [default], Divisions, Floating Point, IntExtend

Integer	Reports scale weight as a signed 16 bit integer (+/- 32767)
Division	Reports scale weight in display divisions (+/-32767). The PLC multiplies the reported divisions by the increment size to calculate the weight in display units.
Floating Point	Displays weight in floating point data format.
IntExtend	Like the **Integer** format, reports scale weight but with the data length changed from 2 bytes to 4 bytes. This mode is for backward compatibility only.

3.8.3.2. Byte Order

Choices are:

Big Endian, Little Endian, Word Swap, **Byte Swap [default]**

3.8.3.3. Used Port

This parameter determines which data format to use. Options are:

1-Port	Use the data format of the IND131/IND331 with 1 Ethernet port **[default]**
2-Port	Use the data format of the IND131/IND331 with 2 Ethernet ports

3.8.4. Profibus DP

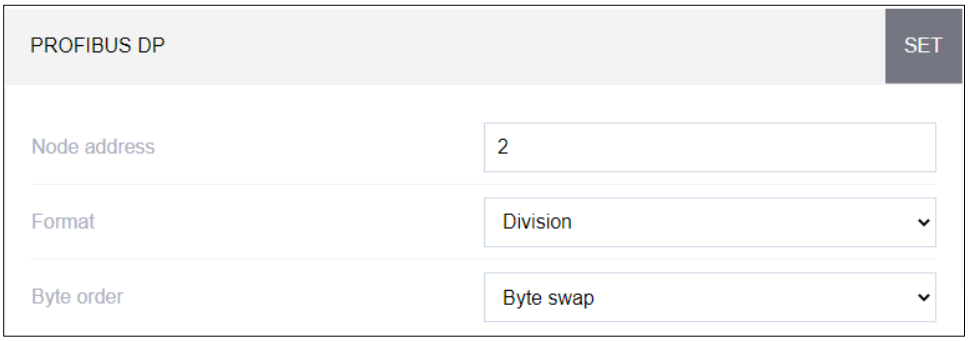


Figure 3-2: Web Interface PROFIBUS DP Screen

3.8.4.1. Format PROFIBUS

Three data formats are available:

Integer [default], Divisions, Floating Point

Integer	Reports scale weight as a signed 16 bit integer (+/- 32767)
Division	Reports scale weight in display divisions (+/-32767). The PLC multiplies the reported divisions by the increment size to calculate the weight in display units.
Floating Point	Displays weight in floating point data format.

3.8.4.2. Byte Order

This parameter selects the order in which the data bytes and words will be presented in the PLC data format. The choices are:

Byte Swap [Default], Standard, Word Swap, Double Word Swap.

Word Swap	Takes the IEE 754 single-precision floating point format and swaps the two words in the 32-bit double word. This format is compatible with RSLogix 5000 processors.
Byte Swap	Makes the floating point format compatible with S7 PROFIBUS.
Double Word Swap	Makes the data format compatible with the Modicon Quantum PLC for Modbus TCP networks.
Standard	Makes the data format compatible with PLC5.

3.8.5. PROFINET

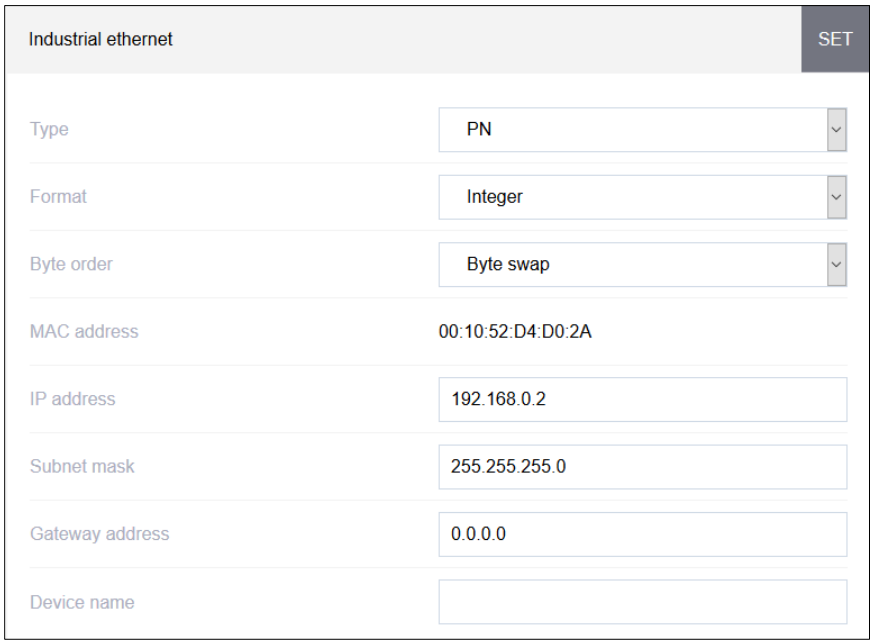


Figure 3-3: PROFINET Screen

3.8.5.1. Format Profinet

Three data formats are available:

Integer [default], Divisions, Floating Point, IntExtend

Integer	Reports scale weight as a signed 16 bit integer (+/- 32767)
Division	Reports scale weight in display divisions (+/-32767). The PLC multiplies the reported divisions by the increment size to calculate the weight in display units.
Floating Point	Displays weight in floating point data format.
IntExtend	Like the **Integer** format, reports scale weight but with the data length changed from 2 bytes to 4 bytes. This mode is for backward compatibility only.

3.8.5.2. Byte Order

Choices are:

Big Endian, Little Endian, Word Swap, **Byte Swap [default]**

3.8.6. Modbus RTU

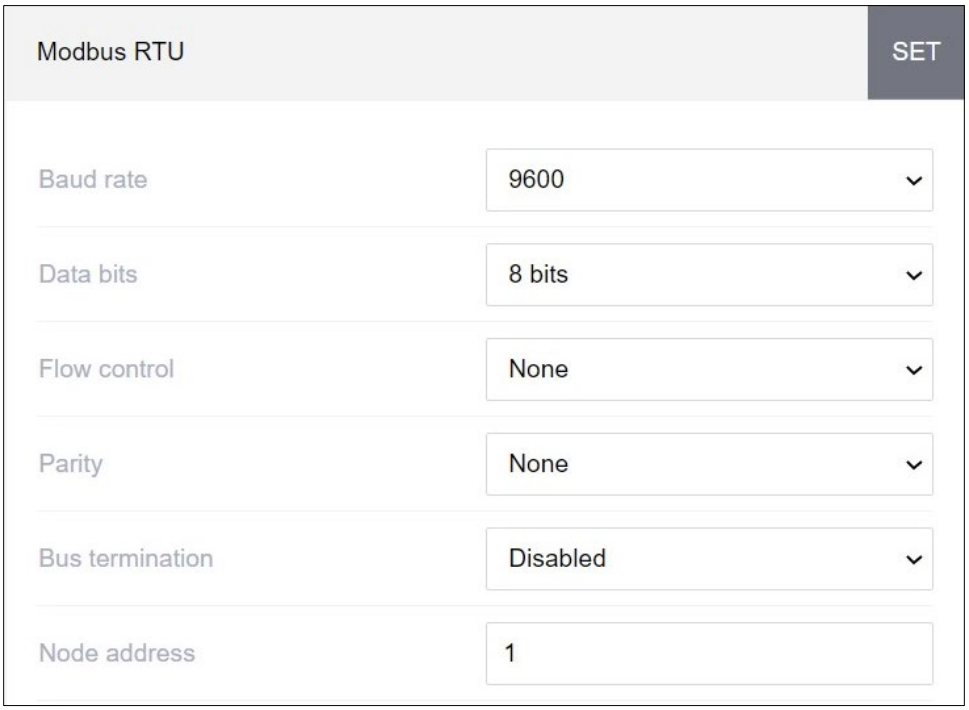


Figure 3-4: Modbus RTU Screen

Integer Division Modbus RTU reports scale weight as a signed 16-bit integer (±32767) Modbus RTU reports scale weight in display divisions (±32767). To calculate the weight in display units, the PLC must multiply the reported number of divisions by the increment size.

3.8.6.1. Byte Order

Byte order is set fixed to Word Swap.

B. Default Settings

B.1. Default Parameter Settings

Table B-1: Default Parameter Settings – Application

Setup Feature	Default Value
Application – DIO Inputs 1 and 2	
Trigger mode	+True
Assignment	None
Application – DIO Outputs 1, 2, 3 and 4	
Assignment	None
Application – Comparators 1, 2 and 3	
Source	None
Description	[Blank]

Table B-2: Default Parameter Settings – Communication

Setup Feature	Default Value
Communication – EtherNet/IP	
Format	Integer
Byte order	Byte Swap
Used port	1-Port
Communication – Profibus DP	
Format	Integer
Byte order	Byte Swap
Communication – Profinet	
Format	Integer
Byte order	Byte Swap
Communication – Modbus RTU	
Format	Integer

C. TCP/IP Communication

C.2. MT-SICS Commands

The IND360legacy does not support MT-SICS commands. These are available in the IND360base.

E. TCP/IP Communication

E.2. MT-SICS Commands

The IND360legacy does not support MT-SICS commands. These are available in the IND360base.

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To protect your product's future:

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www.mt.com/IND360
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