Operating Manual

![motrona logo: motrona® — safety - control - motion - interface]

touchMATRIX® Indicator IX350 / IX355
SSI indicator for absolute encoders, with touchscreen and graphic display

Product features:

- Master or Slave operation with clock frequencies up to 1 MHz
- For single turn and multi turn encoders with SSI formats from 10 … 32 Bit
- Bright and high-contrast display with event-dependent color variations
- Emulation of a 7-segment display inclusively icons and units
- Intuitive and easy parameterization by plain text and touchscreen
- 5 V / 24 V auxiliary output for encoder supply
- Linearization with 24 control points
- Numerous features, e. g. scaling, bit blanking etc.
- 3.78 x 1.89 inch norm panel housing and IP65 protection

Available options:

IX350:   Basic unit with SSI interface, 3 control inputs, 5 / 24 VDC encoder supply
IX355:   Basic unit like IX350, with open-circuit monitoring, 5 / 24 VDC encoder supply

- Option **AC:**   Power supply 115 / 230 VAC
- Option **AO:**   16 bit analog output, 4 control outputs, serial RS232 interface
- Option **AR:**   16 bit analog output, 4 control outputs, serial RS485 interface
- Option **CO:**   4 control outputs, serial RS232 interface
- Option **CR:**   4 control outputs, serial RS485 interface
- Option **RL:**   2 relay outputs

Options can be combined

Die deutsche Beschreibung ist verfügbar unter:
https://www.motrona.com/fileadmin/files/bedienungsanleitungen/lx350_d.pdf

The English description is available at:
https://www.motrona.com/fileadmin/files/bedienungsanleitungen/lx350_e.pdf

La description en français est disponible sur:
https://www.motrona.com/fileadmin/files/bedienungsanleitungen/lx350_f.pdf

The operator software OS 6.0 (freeware) is available at:
https://www.motrona.com/en/support/software.html

Version:	Description:
IX350_01a_oi/cn/Jun-17	First Version
IX350_01b_oi/cn/Jul-17	First Revision
IX350_01c_oi/cn/Jul-17	Revision
IX350_02a_oi/cn/Nov-17	Expansion of the scale units
IX350_02b_oi/cn/Apr-18	Revision
IX350_02b_oi/cn/April-18	Expansion of the serial interface
IX350_03a_oi/cn/Juni-18	Expansion with modbus
IX350_04a_oi/cn/July-18	Extension to parameters SKIP COMMANDS and Modbus description
IX350_05a_oi/tgo/March-19	Extension of parameter SSI ZERO
IX350_05b_oi/mbo/Aug-19	Extension of QR-code
IX350_06a_oi/tgo/Jul-20	Extension by additional speed display u. large display. (Additional scaling parameters + "Source" parameters for display, analog and switching outputs added + error messages implemented

Table of content

1. Safety Instructions and Responsibility

1.1.　General Safety Instructions

This operation manual is a significant component of the unit and includes important rules and hints about the installation, function and usage. Non-observance can result in damage and/or impairment of the functions to the unit or the machine or even in injury to persons using the equipment!

Please read the following instructions carefully before operating the device and <u>observe all safety and warning instructions!</u> Keep the manual for later use.

A pertinent qualification of the respective staff is a fundamental requirement in order to use these manual. The unit must be installed, connected and put into operation by a qualified electrician.

Liability exclusion: The manufacturer is not liable for personal injury and/or damage to property and for consequential damage, due to incorrect handling, installation and operation. Further claims, due to errors in the operation manual as well as misinterpretations are excluded from liability.

In addition the manufacturer reserves the right to modify the hardware, software or operation manual at any time and without prior notice. Therefore, there might be minor differences between the unit and the descriptions in operation manual.

The raiser respectively positioner is exclusively responsible for the safety of the system and equipment where the unit will be integrated.

During installation or maintenance all general and also all country- and application-specific safety rules and standards must be observed.

If the device is used in processes, where a failure or faulty operation could damage the system or injure persons, appropriate precautions to avoid such consequences must be taken.

1.2.　Use according to the intended purpose

The unit is intended exclusively for use in industrial machines, constructions and systems. Non-conforming usage does not correspond to the provisions and lies within the sole responsibility of the user. The manufacturer is not liable for damages which have arisen through unsuitable and improper use.

Please note that device may only be installed in proper form and used in a technically perfect condition (in accordance to the Technical Specifications). The device is not suitable for operation in explosion-proof areas or areas which are excluded by the EN 61010-1 standard.
.

1.3. Installation

The device is only allowed to be installed and operated within the permissible temperature range. Please ensure an adequate ventilation and avoid all direct contact between the device and hot or aggressive gases and liquids.

Before installation or maintenance, the unit must be disconnected from all voltage-sources. Further it must be ensured that no danger can arise by touching the disconnected voltage-sources.

Devices which are supplied by AC-voltages must be connected exclusively by switches, respectively circuit-breakers with the low voltage network. The switch or circuit-breaker must be placed as near as possible to the device and further indicated as separator.

Incoming as well as outgoing wires and wires for extra low voltages (ELV) must be separated from dangerous electrical cables (SELV circuits) by using a double resp. increased isolation.

All selected wires and isolations must be conform to the provided voltage- and temperature-ranges. Further all country- and application-specific standards, which are relevant for structure, form and quality of the wires, must be ensured. Indications about the permissible wire cross-sections for wiring are described in the Technical Specifications.

Before first start-up it must be ensured that all connections and wires are firmly seated and secured in the screw terminals. All (inclusively unused) terminals must be fastened by turning the relevant screws clockwise up to the stop.

Overvoltage at the connections must be limited to values in accordance to the overvoltage category II.

1.4.   EMC Guidelines

All motrona devices are designed to provide high protection against electromagnetic interference. Nevertheless you must minimize the influence of electromagnetic noise to the device and all connected cables.

Therefore the following measures are mandatory for a successful installation and operation:

- **Use shielded cables for all signal and control input and output lines.**
- **Cables for digital controls (digital I/O, relay outputs) must not exceed a length of 30 m and are allowed for in building operation only**
- Use shield connection clamps to connect the cable shields properly to earth
- The wiring of the common ground lines must be star-shaped and common ground must be connected to earth at only one single point
- The device should be mounted in a metal enclosure with sufficient distance to sources of electromagnetic noise.
- Run signal and control cables apart from power lines and other cables emitting electromagnetic noise.

Please also refer to motrona manual "General Rules for Cabling, Grounding, Cabinet Assembly". You can download that manual by the link
https://www.motrona.com/en/support/general-certificates.html

1.5.   Cleaning, Maintenance and Service Notes

To clean the front of the unit please use only a slightly damp (not wet!), soft cloth. For the rear no cleaning is necessary. For an unscheduled, individual cleaning of the rear the maintenance staff or assembler is self-responsible.

During normal operation no maintenance is necessary. In case of unexpected problems, failures or malfunctions the device must be shipped for back to the manufacturer for checking, adjustment and reparation (if necessary). Unauthorized opening and repairing can have negative effects or failures to the protection-measures of the unit.

2. Introduction

The SSI display device is designed for panel mounting. It is universally applicable, with its intuitive operation, the extensive features and options.

2.1.   Operation mode

All functions are can be configured in the parameter menu.
The device can be set to one of the following operation modes:

- MASTER
    - -The clock for the connected sensor is produced
    - -The both clock terminals (CLK, / CLK) are configured as outputs in this case

- SLAVE
    - -The clock for the encoder is generated by an external device (the SSI master).
    - -The both clock terminals (CLK, / CLK) are configured as inputs in this case

2.2.   Function diagram

Clock

Data

MODE
- Master
- Slave

COUNTING DIRECTION

SSI PROPERTIES
- Resolution
- High / low bit
- Format
- ...

LINEARIZATION
- Mode: 1 Quadrant
- Mode: 4 Quadrant

PRESELECTION
-99999999
...
+99999999

- Switching Mode
- Output Target
- Hysteresis
- ...

OUTPUT
- Display — LCD
- Control Out
- Relais Out
- Serial Out * — RS232
- Analog Out *

* Independent of Preselection