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DEMA IR101-KA2 Annunciator Relay QUICK GUIDE

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INTRODUCTION

DEMA proudly presents the users and modern networks a solid alternative for annunciating duties with IR101-KA2; with the state-of-art physical and functional technology for use in LV, MV or HV facilities; and provides the users numerous assembly, commissioning, operating and servicing advantages as well as the lowest total cost of ownership.

DEMA IR101-KA2 is the enhanced sequel to DEMA IR101-KA1 model, featuring several electrical, mechanical and dimensional improvements, and have been presented to service under the guarantee of ISO9001:2000 Quality Assurance System.

The general specifications of IR101-KA2 are listed below to create a common sense for the product.

- 10 independent announcer inputs and outputs,
- Software for announcer labeling for PC printers,
- Annunciator label changeability,
- Extremely low auxiliary burden,
- LED indicators with 1,000,000 h MTBF and extreme brightness for easier notification,
- LED testing function,
- Horn output with LED indication,
- Horn stop function,
- Inputs for external horn stopping and resetting,
- Operation without removing cover, thanks to IP52 button integrated on the cover,
- Precision manufacturing,
- Draw-out system,
- Unbreakable protective earth circuit continuity,
- New generation casing with IP52 front side protection, IP20 rear side protection,
- Expert technical crew and matchless customer support. □

TECHNICAL DESCRIPTION

IR101-KA2 – Input / Output Features

Annunciator Inputs	10
Annunciator Outputs	10, dry-contact, I _r = 5 A.
Horn Outputs	1, dry-contact, I _r = 5 A.
Horn Stop Input	1
Reset Input	1

IR101-KA2 - Power Features

Supply Voltage	(24 / 48 / 110 / 220) V _{DC}
Operational Supply Voltage Range	+%15 U _{r,aux} / -%15 U _{r,aux}
Stand-by Power Consumption	No consumption.
Maximum Power Consumption, excl. horn feed	max.16 W (572 mA) (24 V _{DC} model) max.18 W (322 mA) (48 V _{DC} model) max.24 W (189 mA) (110 V _{DC} model) max.42 W (166 mA) (220 V _{DC} model)

IR101-KA2 - Physical Properties

Case Type	DRC 96 – S2
Degree of Protection for Front Side	IP 52
Degree of Protection for Rear Side & Terminals	IP 20
Mounting	Flush
Main Unit	Withdrawable

PACKING AND LABELING INFORMATION

Package Information

Gross Weight: 2.25 kg

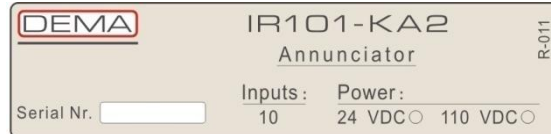
Contents: Please check the following items upon arrival:

- IR101-KA2 Annunciator Relay, 1 piece.
- Connecting Elements Set, 4 x (custom screws, nuts and washers).
- IR101-KA2 Annunciator Relay Quick Guide (this document).

Unit Label Information

Unit label is shown at the picture below, and gives the following information:

Producer Logo	DEMA
Product Name	IR101-KA2
Product Description	Annunciator
Product Serial Number	IR.123456
Input Quantity	10 Inputs
Auxiliary Power Supply	24 / 48 / 110 / 220 VDC □



MOUNTING IR101-KA2

Flush mounting requires processing of the panel – the cut-out drawing can be found on this document. The dimensions on the drawing are determined taking standard electrostatic coating thickness into consideration.

Mounting of the relay case on the prepared panel is done as described below.

1. Open the relay cover, preferably drive out the internal unit for easier mounting. If the internal unit is drawn out, take all precautions against dusting and damaging of the unit.
2. Place the case into the cut-out.
3. Use the supplied 4 sets of M4 custom screws, standard M4 nuts and washers to fix the case onto the panel. Drive the screws from the front first, then tighten the nuts on the washers from the backside of the panel. Make sure that the supplied custom screws are used for mounting. Using any other screws may result in sealing failure and loss of protection degree of the cover!
4. Make sure that all 4 mounting holes are screwed and tightened. Mounting the case from lesser points may result in mechanical stresses and bending on the case construction due to possible deformations on the panel. Such inappropriate applications may harden driving the internal unit into or out of the case.
5. Always use torque drivers when working with the relay. Apply (0.69-0.82) Nm torque when tightening the nuts.

Inserting the internal unit and mounting the cover are done as described below.

1. Rotate the lock handle to provide an approximate degree of 90 between the handle and the internal unit. Drive the internal unit into the case until the unit fits well, the press the lock button to lock the unit in place. This will ensure healthy and robust electrical connection between the internal unit and the case.
2. Place the bottom part of the cover into its place on the case first, then close the cover on the case. Make sure the cover fits in its place and the sealing is provided between the cover and the case. Tighten the mounting element integrated on the cover.

0.20 Nm torque is sufficient to provide IP52 protection when tightening the mounting element on the cover. Never apply torque values higher than 0.29 Nm! This may damage the mounting elements and may lead the cover out of service! □

CABLING IR101-KA2

Cabling Schema

IR101-KA2 circuit diagram and application schema are provided on the backside of this document.

Cabling Material

Cabling material selection is of great importance for all secondary systems. The principles listed below are to be followed to build a robust system.

Cabling with thin & multi-wire cables:

- Never make a connection without applying ferrules to wire ends!
- Use 8 mm wire end ferrules for all block terminals, which are labeled with numbers from 1 to 28. Using ferrules longer than 8 mm may reduce the dielectric withstand capability of the wiring!
- Provide solid earthing of the relay with low resistance earth grid. Use ring cable connectors for connections to relay earthing bolt. Make the earthing connection directly to earth. Never earth the device indirectly or over high resistances!
- **WARNING!** Solid earthing is one of the fundamental actions to provide minimum safety requirements. Before commissioning any electrical system, make sure that earthing process is done correctly according to the relevant standards!
- Use appropriate tools for crimping the ferrules. Preferably use crimping tools with trapeze cross-section crimping type.
- Use appropriate tools for stripping the cables. Preferably use stripping tools with adjustable stripping lengths. Apply the instructions of the ferrule manufacturer when stripping.
- Use appropriate tools for removing the outer coat of multi-core cables, if applicable. Preferably use cables with fillers and blades with adjustable cutting depths. Apply the instructions of the cable manufacturer.
- Use torque screwdrivers to tighten the terminal bolts. Apply (0.56 - 0.69) Nm torque to the bolts – torque application lower than 0.69 Nm may lead

to open circuits or high contact resistances, while excessive torque application may damage the terminals!

- Use non-flammable, standards compliant cables.
- Determine the wire cross-sections according to relevant standards and engineering principles.

Cabling with single wire cables

Cabling with single wire cables is not recommended for secondary systems. Mechanical aging risks, increasing contact resistance over time, and poor flexibility are the leading cons of single wire cables. If cabling with single wire cables is essential, check all connections with great care and apply routine checking procedures to prevent failures. □

SETTING IR101-KA2

IR101-KA2 Annunciator Relays are delivered as all necessary adjustments and tests made, and there are no setting options for the relay, therefore, there are no actions that are needed to be taken by the user prior to commissioning. □

LABELING IR101-KA2

Use the template label file you can provide from DEMA for printing out precise IR101-KA2 labels. Note that the labeling template requires Microsoft® Office Word 97 or later versions installed on your PC. □

COMMISSIONING IR101-KA2

Use the procedure below to commission each IR101-KA2 unit after the mounting, cabling and labeling actions are taken. The procedure of commissioning IR101-KA2 is examined below; note that some parts of the procedure are not related to the unit, thus are not explained thoroughly - so take professional help for these steps if needed. Use appropriate devices during the tests to build and erect a healthy annunciator system!

- **Auxiliary Supply Check** Auxiliary supply cabling and auxiliary power supply functionality tests,
- **Function Tests** Feeding each of the annunciator inputs from the source device (e.g. the power transformer Buchholz relay contacts) to check annunciator functionality, test of LED's via integrated button, testing of the external announcing system (e.g. external horn) and horn stopping function,
- **Finalization** Energizing the primary circuit / Taking each related component under normal service conditions.□

OPERATING IR101-KA2

Stand-by State

After the successful commissioning of IR101-KA2, normal stand-by conditions are reached; this condition is kept as long as system components operate correctly and there are no alarm signals to the inputs of IR101-KA2.

Announcing State with External Annunciating Device Active

When an alarm input is activated by an external contact (e.g. the Buchholz Alarm contact from the power transformer), IR101-KA2 reacts as follows:

- the horn relay is activated by the impulse device integrated within the IR101-KA2 relay, and the horn contact is closed to supply the external announcing device (e.g. horn). Note that the horn relay is latching type; thus keeps active even if the input signal disappears!
- The LED for the related signal runs to indicate the source of the signal.
- The output relay for the related input closes its contacts to conduct a signal for the external receiving device, if available.

Announcing State with External Annunciating Device Passivized

After the announcing system successfully attract attention of the personnel, the horn is no longer needed to announce or disturb the personnel. Horn Stop button integrated on the device is utilized to stop the horn, without clearing the LED indications or resetting the outputs.

Resetting

After the source event(s) that triggered the annunciator is observed and treated as necessary, it is time to reset all LEDs and outputs. Integrated Signal Reset button is pressed to complete the job. Note that, if any inputs still receive signals, it will not be possible to reset the LEDs and outputs related to these inputs. □

TESTING, MAINTENANCE AND REPAIRATION OF IR101-KA2

Under normal service conditions, no testing or maintenance action is required for IR101-KA2. If IR101-KA2 somehow becomes unstable or out of service under a paranormal condition; testing, maintenance or reparation of the unit may become essential.

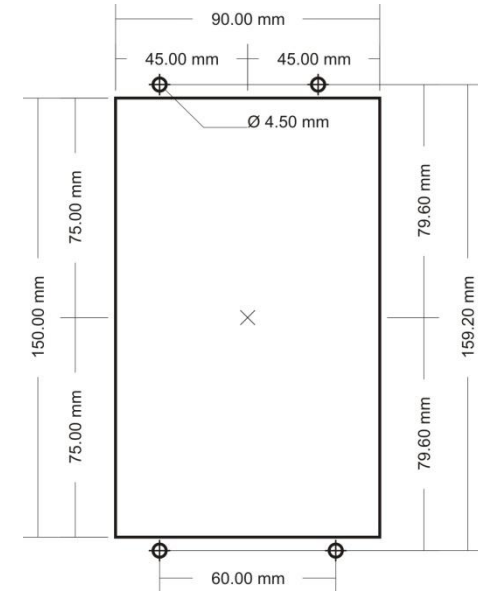
Apply the procedure at the "Commissioning IR101-KA2" section, and check to diagnose the following possible causes of irregularities:

- Check the availability of auxiliary supply voltage.
- Check and see that the cabling of the unit is healthy.
- Check and see that the auxiliary supply system operates correctly and supplies the unit within the specified supply voltage range.
- Check to see that the alarm contacts of external devices like power transformers and protection devices are healthy and operating correctly.

If no diagnosis for the reason of malfunction can be spotted, contact DEMA Relay Company for further assistance and advanced diagnosis methods.

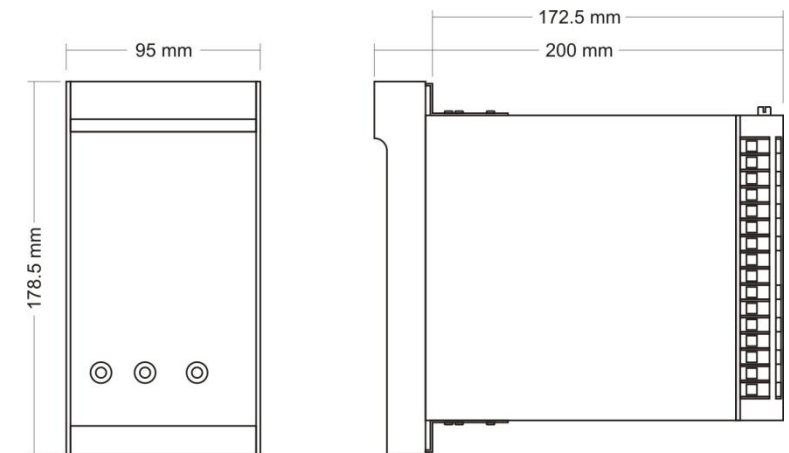
Note that, if somehow reparation is needed for the device, there is no need to remove the cabling from IR101-KA2 terminals. Simply draw out the internal unit to replace it immediately with a spare unit. □

CUT-OUT DIMENSIONS FOR FLUSH MOUNTING

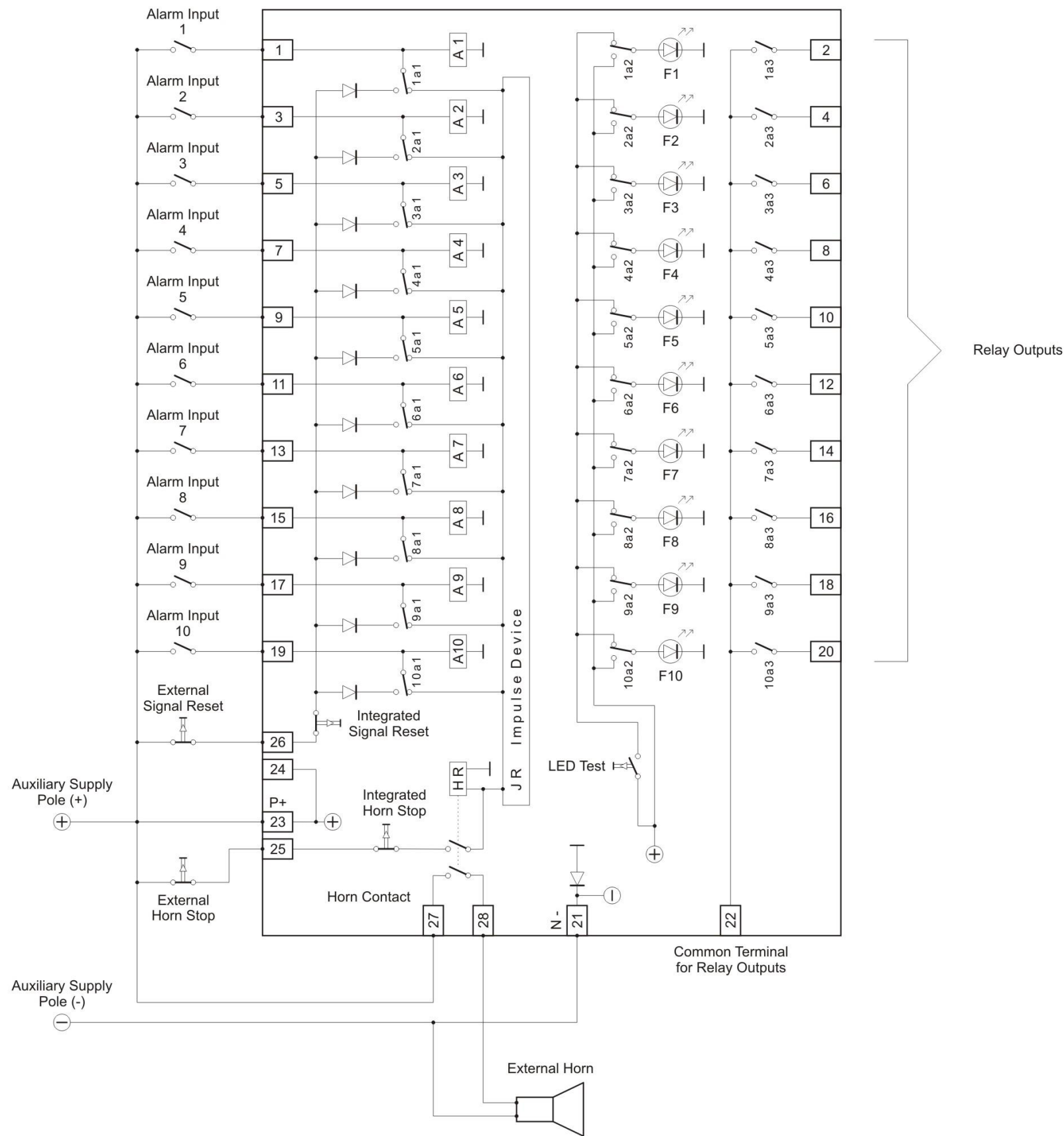


DRC 96 - S2 Cutout Drawing

OVERALL DIMENSIONS OF IR101-KA2



DEMA IR101-KA2 Overall Dimensions



NOTES ON THE APPLICATION SCHEMA

This application schema is a sample project to provide users a clear understanding about the usage of IR101-KA2.

Please note that the bridges connecting terminal no.s 24 to 26 and 23 to 25 has been removed to enable external signal resetting and horn stopping via buttons. Do not remove those bridges if you do not use external command devices.

Please note that the external buttons used at the application are equipped with normally closed contacts. Never use Making contacts for the mentioned purpose, this will prevent the supply to the inputs!

Inputs shown on the schema with labels "Alarm Input 1" to "Alarm Input 10" are contacts to provide signals to the annunciator relay from devices like power transformers, protection relays and similar. Make sure that auxiliary contacts from these devices are NO (normally open) type.

Make sure that the auxiliary supply cabling provides correct polarity to IR101-KA2 terminals; otherwise, the relay will not function.

Make sure that the external announcing device fed from the terminals no.s 27 and 28 has a power consumption rating equal to or less than the horn contact rating. Please see the "Technical Description" section for detailed information.

Relay outputs are used for various purposes through various projects, therefore are not cabled on this application schema to preserve the universal approach. Please note that the output contacts are dry type contacts and terminal no. 22 must be fed from one of the appropriate auxiliary supply poles to provide signals to external receivers.

Always test the functionality of a system prior to commissioning. Include the alarm input contacts from remote devices like power transformers, protection devices and others in the test procedure to ensure the reliability of the system. Perform a full range of horn, signaling and output signal reception series of test.

A solid earthing of the case is of essence to provide a safe and reliable service. Apply appropriate measures to check and see that a healthy protective earthing is provided to all devices in your control panel, as well as DEMA IR101-KA2