



## MIRA



The MALA MIRA System is based on the MALA ProEx Control Unit



Array Option as part of the MALA MIRA System



The MALA ProEx Control Unit with the array option attached



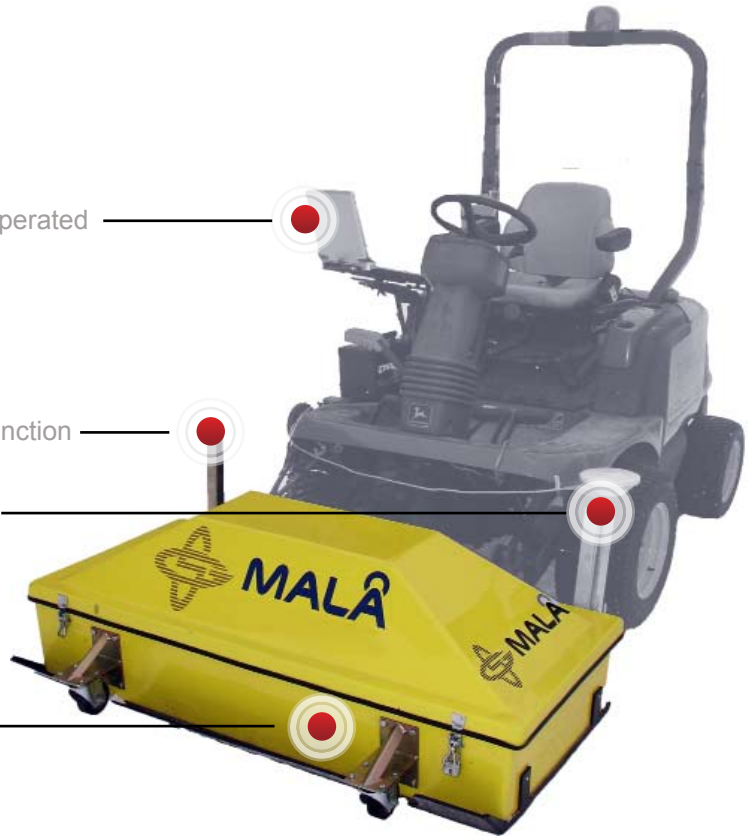
The MIRA system handles MALA Separable antennas, Tx and Rx.

1. Laptop Computer\* Operated

2. Automatic Marker Function

3. Positioning System\*

4. Separable Antennas combined to one Antenna Array



\* Note! Vehicle, positioning system, laptop computer and power source are not included in the MIRA basic system but can be added upon request.

# MALÅ MIRA System

MIRA - Malå Imaging Radar Array for fast and true 3D data acquisition

Traditional use of the GPR technology involves both single and multi-channel systems in many types of applications e.g. utility mapping, archaeological investigations, forensic investigations etc. When deploying ordinary GPR systems, the results suffer from lack of real 3D capabilities i.e. the line spacing in the surveys will, for practical reasons, be too large, meaning that information loss are inevitable. Also, reliable positioning of detected target cannot be made easy, neither in the data acquisition process nor in the reporting phase of a typical project. The MALÅ MIRA Systems are the first commercial systems designed to overcome these limitations.

As opposed to other commonly marketed multi-channel systems, which in many cases could be regarded as parallel single channel systems, the MALÅ MIRA system enables fast and true 3D data acquisition. From a user perspective this means that large areas can be mapped without loss of information and that the method is suitable for almost any kind of, shallow, subsurface investigations, i.e. targets with arbitrary shape, layers and linear objects are mapped equally well.

## Main Applications

The MALÅ MIRA system enables fast and true 3D data acquisition and the target applications for the MALÅ MIRA systems are radar surveys over large areas. Since these areas are mapped without any loss of information it makes it suitable for any kind of shallow subsurface investigations such as:

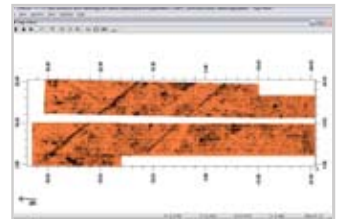
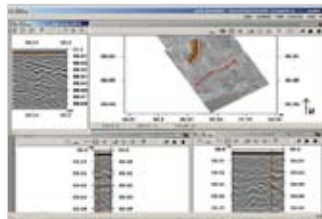
- Utility Mapping
- Archaeological Investigations
- Forensic Investigations
- And more!

## Specific Features

For large projects the MALÅ MIRA system is a cost effective solution in comparison with ordinary GPR systems even if the difference in initial cost may be considered substantial.

The main unique advantages are:

- Seamless integration of radar and positioning data combined with quality checks at time of data gathering.
- Easy-to-use 3D processing and interpretation software which enables interpretation of huge data-sets. The software is easy and straight forward without complex import schemes.
- Small channel spacing, high acquisition speed and arbitrary shooting sequences, allow data collection without loss of information. These critical criteria's have often been overseen in the past.



## System Configuration

A functional MALÅ MIRA system comprises many sub-systems. The main parts of the system are listed below:

- Separate transmitter and receiver antennas with the centre frequencies of 200MHz, 400MHz or 1.3 GHz.
- Suitable antenna box.
- Modified MALÅ ProEx control unit with the MALÅ MIRA array option. The standard configuration is equipped with 16 channels but it can handle 31 data channels.
- MIRA-Acquisition software for data acquisition.
- MIRA-Interpretation software package, rSlicer.
- Positioning system\*, robotic total station or RTK GPS.
- Windows based computer\* to collect, save and process data.
- Suitable vehicle\* or arrangement to move the antenna array.

\* Note! Vehical, positioning system, laptop computer and powe source is not included in the MALÅ MIRA basic system but can be added upon request.

## Technical Specification

Control unit- ProEx with array option

<b>Dimension:</b>	222x160x285[mm]
<b>Weight:</b>	5.5 Kg
<b>Power:</b>	3 A@12V, 10-14V operation and possible to supply from car battery
<b>PRF:</b>	2 versions 100 and 200kHz
<b>Time window:</b>	130ns, minimum
<b>Data input:</b>	Serial 16-bit
<b>Max no. of channels:</b>	31 channels, handling max 16 RX and 16 TX antennas
<b>Number of samples:</b>	up to 1024
<b>Communication:</b>	Point to point Ethernet, 100Mbit/s
<b>Positioning input:</b>	Compatible with all MALÅ measuring wheels
<b>Environmental:</b>	IP65

A comprehensive technical specification for the complete system and its antennas is available from MALÅ head office upon request.

### Head Office

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