The Meaco Driver

The Meaco driver connects to a Meaco radio telemetry environmental monitoring system for museums and historic houses. Available for Commander and ObSys.

This document relates to Meaco driver version 2.0

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from *www.northbt.com*

Contents

Compatibility with the Meaco System

The Meaco driver allows North to interface with a Meaco radio telemetry environmental monitoring system for museums and historic houses.

The driver connects to a Meaco receiver, via DB9 serial connection port (Fig. 1). Each transmitter sends its values periodically, which are then stored by the driver.

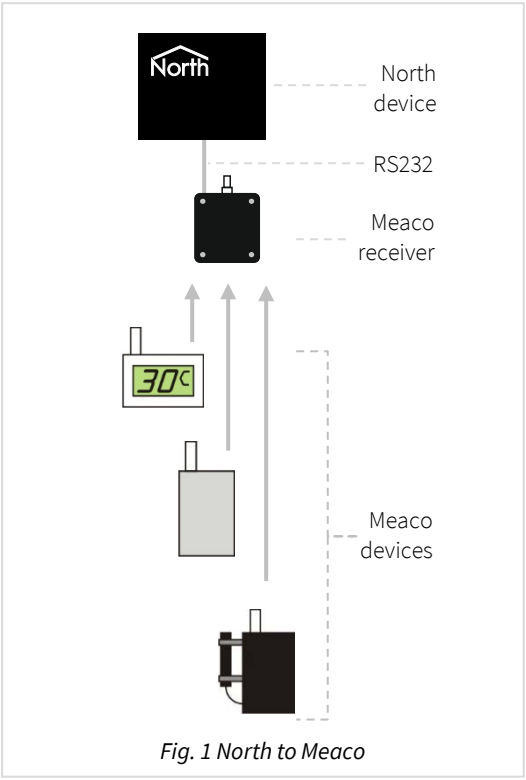

Fig. 1 North to Meaco

Equipment

The full range of Meaco transmitters is compatible with the driver, including:

- STX (temperature and humidity)
- SLTX (temperature, humidity, lux and UV)
- HTX with HygroClip sensor (temperature and humidity)
- HLTX with HygroClip sensor (temperature, humidity, lux and UV)

Values

Depending on the type of Meaco sensor, typically the following values are available:

- Temperature (°C)
- Relative humidity (%)
- Illuminance/Light level (lux)
- UV level (µW/lm)
- Transmitter battery low

Prerequisites

The standard Meaco receiver (model: FE-North) requires no configuration, and is powered using a 12VDC supply. This power supply can also be used to supply Commander.

For the legacy Meaco receiver (manufactured before 2021): Check the 4-way DIP switch inside the Meaco receiver. Set switch 2 to OFF (Meaco mode); Set switch 1 to ON (9600 baud) or OFF (2400 baud), the driver will auto-baud before re-configuring to 19200 baud.

Using the Driver

On ObSys and Commander, the Meaco driver is pre-installed. On all of these North devices, you can use the driver to create an interface to a Meaco system. Once started, you will need to set up the driver before it can communicate with the Meaco system.

Making the Cable

Standard receiver (manufactured since 2021):

Using the RS232 cable attached to the Meaco receiver, connect to the North device's COM port.

The Meaco receiver requires a 12VDC power supply. The same power supply can be used for Commander. Connect the red (+12V) and black (0V) cable from the receiver to Commander's power connector.

If you require an extension to the supplied RS232 cable, the specification follows (Fig. 2) with connector types at each end of the cable shown:

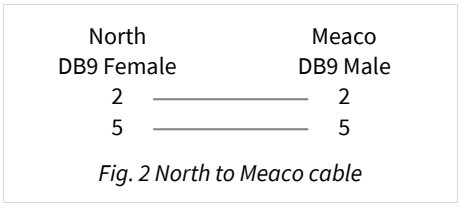

Fig. 2 North to Meaco cable

A 1m cable is supplied with the Meaco receiver. The maximum RS232 cable length is 15m and should be as short possible.

Legacy receiver (manufactured before 2021):

The RS232 cable specification (Fig. 3), with connector types at each end of the cable, is shown.

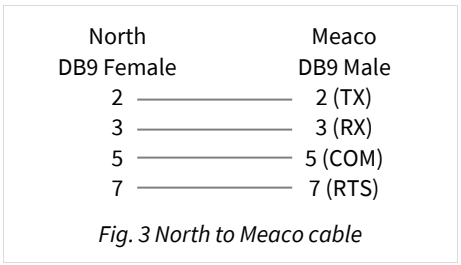

Fig. 3 North to Meaco cable

The maximum RS232 cable length is 15m and should be as short possible.

Starting the Interface

To start an interface using the Meaco driver, follow these steps:

- → **Start Engineering** your North device using ObSys
- → Navigate to **Configuration, Interfaces,** and set an unused **Interface** to 'Meaco' to start the particular interface
- → Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc), labelled **Meaco Setup**, should now be available. If this object is not available, check an interface licence is available and the driver is installed.

Setting up the Driver

To set up the driver, follow these steps:

- → Navigate to **Configuration** object (O), and check **Local Date & Time** is set
- → Navigate to the **Meaco Setup** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'
- → Set **RS232 Com port** to the port number of the North device you are connecting to Meaco
- → From **Network Setup**, for each **Address** present on the radio network set a **Sensor Type** to decode the values received.

Checking Communications

You can check that the interface is communicating by reading the **Comms Online** object (DS). A value of 'Yes' indicates the driver has connected to, and is communicating with the Meaco receiver.

Use **Last Message from Address** object (LM) to see which transmitters are sending data.

The driver adds a timestamp to each value received, check the North device's date & time has been set (it doesn't have to be correct).

Object Specifications

Once an interface is started, one or more extra objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) – the whole object structure being a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Each object is specified below, along with its sub-objects.

Example Object Reference

An example of a reference to an object in the same device: the Meaco System (S1) contains a transmitter at address 76 (A76) with channel 1 value (C1.V). Therefore, the object reference will be 'S1.A76.C1.V'.

An example of a reference to an object in a different device: the IP network object (IP) contains Default Commander object (CDIP), which contains the object above (S1.A76.C1.V) – therefore the complete object reference is 'IP.CDIP.S1.A76.C1.V'.

Device Top-Level Objects

When an interface is started using the Meaco driver, the objects below become available within the top-level object of the device. For example, if Interface 1 is started, then the object with references 'M1' and 'S1' become available.

Description	Reference	Type
Meaco Setup Set up the Meaco driver, started on interface *c* (*c* is the interface number)	M*c*	Fixed Container: On the Commander platform this will be *[CDM v20\Meaco v20]* On the ObSys platform this will be *[OSM v20\Meaco v20]*
Meaco System Access Meaco system connected to interface *c* (*c* is the interface number)	S*c*	Variable Container: *[Meaco v20]*

Meaco Setup

Object Type: *[OSM v20\Meaco v20]*
Object Type: *[CDM v20\Meaco v20]*

The Meaco driver contains the following objects:

Description	Reference	Type
System Label Label displayed when scanning the system	DL	Obj\Text: 20 chars; Adjustable
Receiver Type Type of Meaco receiver connected to North device	RT	Obj\ENum; Adjustable Values: 0=Standard, 1=Legacy
RS232 Com Port	RS.COM	Obj\Num; Range: 1…8; Adjustable
Sensor Timeout (mins) If a transmitter does not send its values within this timeout period, then the value held by the driver is considered out of date	TO	Obj\Num: 0…1440; Adjustable Default: 20mins
Comms Online Shows if data from the Meaco system is being received	DS	Obj\NoYes
Last Message from Address Reports the address of the last transmitter to sent data	LM	Obj\Num
Reset Connection Deletes all values held by the driver and resynchronises with the receiver. Use this when changing or removing addresses from the network	RST	Obj\NoYes; Adjustable
Network Setup Assign addresses with a particular sensor type, and optional label	N	Fixed container: On the Commander platform this will be *[CDM v20\Meaco v20\Net]* On the ObSys platform this will be *[OSM v20\Meaco v20\Net]*
Sensor Types Define additional sensor types with decode formula to match those installed on your network	ST	Fixed container: On the Commander platform this will be *[CDM v20\Meaco v20\Sensors]* On the ObSys platform this will be *[OSM v20\Meaco v20\Sensors]*

Network Setup

Object Type: *[OSM v20\Meaco v20\Net]*
Object Type: *[CDM v20\Meaco v20\Net]*

The Meaco driver's network setup contains the following objects:

Description	Reference	Type
Address *x* The transmitter address, *x*, is in the range 1…255	A*x*	Fixed container: On the Commander platform this will be *[CDM v20\Meaco v20\Net\Addr]* On the ObSys platform this will be *[OSM v20\Meaco v20\Net\Addr]*

Network Address Setup

Object Type: *[OSM v20\Meaco v20\Net\Addr]*
Object Type: *[CDM v20\Meaco v20\Net\Addr]*

The Meaco driver's network address setup contains the following objects:

Description	Reference	Type
Label	L	Obj\Text: 20 chars; Adjustable
Sensor Type Choose from a pre-defined or user-defined sensor type. Add user-defined types to the driver's Sensor Configuration	ST	Obj\ENum: 1…14; Adjustable Values: 1=Type 1, 2=Type 2, 3=Type 3, 4=Type 4, 5=Type 5, 6=Type 6, 7=Type 7, 8=Type 8, 9=Type 9, 10=Type 10, 11=HTX (temp/hum), 12=STX (temp/hum), 13=Lux/UV, 14=S2TX (temp/hum)
Online Shows if values from the Meaco transmitter have been received	S	Obj\NoYes

Sensor Types

Object Type: *[OSM v20\Meaco v20\Sensors]*
Object Type: *[CDM v20\Meaco v20\Sensors]*

The driver contains pre-defined types for standard HTX, STX, S2TX and Lux/UV sensors. If your project uses a bespoke sensos, use this object to defined the new sensor type and how it's data is decoded.

Sensor Types contains the following objects.

Description	Reference	Type
Type *x: label* The sensor type, *x*, is in the range 1…10	T*x*	Fixed container: On the Commander platform this will be *[CDM v20\Meaco v20\Sensors\Type]* On the ObSys platform this will be *[OSM v20\Meaco v20\Sensors\Type]*

Sensor Type Setup

Object Type: *[OSM v20\Meaco v20\Sensors\Type]*
Object Type: *[CDM v20\Meaco v20\Sensors\Type]*

A Meaco sensor can include up to eight channels of data. Use this object to set up a new sensor type with data format and formula to decode each channel available. The following objects are available:

Description	Reference	Type
Label	L	Obj\Text: 20 chars; Adjustable
Data Format Set to the format of data sent by the sensor. All current sensors use 16bit formats	DT	Obj\ENum; Adjustable Values: 0=16-bit word, 1=16-bit decimal, 2=12-bit temp/hum, 3=8-bit UV
Channel *x: label* The channel number, *x*, is in the range 1…8	C*x*	Fixed container: On the Commander platform this will be *[CDM v20\Meaco v20\Sensors\Chan]* On the ObSys platform this will be *[OSM v20\Meaco v20\Sensors\Chan]*

Sensor Channel Setup

Object Type: *[OSM v20\Meaco v20\Sensors\Chan]*
Object Type: *[CDM v20\Meaco v20\Sensors\Chan]*

The Meaco sensor channel setup allows sensor data to be converted into a value with engineering units.

The module can convert the number into an object value using the formula:

```
real-value = (M x sensor-value) + A
```

The Meaco sensor channel setup contains the following objects:

Description	Reference	Type
Label	L	Obj\Text: 11 chars; Adjustable
Units	U	Obj\Text: 7 chars; Adjustable
Multiplication value	M	Obj\Float; Adjustable
Addition value	A	Obj\Float; Adjustable

Meaco System

Object Type: *[Meaco v20]*

A Meaco system contains the following objects:

Description	Reference	Type
Address label The address, *x*, is in the range 1…255. The *address label* is as configured in the driver's Network Setup. Note that some multi-sensors take two addresses (i.e. address for temp/hum, then next address for lux/UV)	A*x*	Fixed container: *[Meaco v20\Addr]*

Additional objects

When the interface is first started, or Unit Auto-discovery Enable object (U.E) or the driver Reset object (RST) are set, the interface will automatically discover the Meaco transmitters sending data. These are added to a list of discovered units, sorted in order of their address. Once the interface has completed auto-discovery, any new addresses discovered are added to the end of this list.

The Unit objects provide an alternative method of accessing data from the Meaco system – instead of using the transmitter's address (A*x*), it is accessed by a list of discovered units (U*y*).

A Meaco system also contains the following objects:

Description	Reference	Type
Unit Auto-discovery Enable Start or stop auto-discovery	U.E	Obj\OffOn; Adjustable
Unit Auto-discovery Status Status of the auto-discovery. This typically indicates 'completed' or a minute countdown during discovery.	U.S	Obj\Text
Units Discovered Number of addresses discovered	U.D	Obj\Num: 0…60
Units Minimum Address In a multi-site area, set auto-discovery to ignore addresses below the number set here	U.MA	Obj\Num: 0…200; Adjustable
Unit *y* The discovered unit entry, *y*, is in the range 1…60	U*y*	Fixed container: *[Meaco v20\Unit]*

Address

Object Type: *[Meaco v20\Addr]*

A Meaco address contains the following objects:

Description	Reference	Type
Label As configured in the driver's Network Setup object	L	Obj\Text: 20chars
Battery Low Indicates transmitter is reporting a low battery	BA	Obj\NoYes
Online Indicates transmitter has reported values within the Sensor Timeout period	S	Obj\NoYes
Chan *x* The channel number, *x*, is in the range 1…8	C*x*	Fixed container: *[Meaco v20\Chan]*

Channel

Object Type: *[Meaco v20\Chan]*

A Meaco transmitter's channel contains the following objects:

Description	Reference	Type
Label	L	Obj\Text: 9 chars
Value	V	Obj\Float
Units	U	Obj\Text: 7 chars
Last updated Time the sensor last reported value	DT	Obj\DateTime

Unit

Object Type: *[Meaco v20\Unit]*

A Meaco unit contains the following objects:

Description	Reference	Type
Address Address of transmitter	A	Obj\Num
Label Transmitter label can be set using this object or in the driver's Network Setup object	L	Obj\Text: 20chars; Adjustable
Battery Low Indicates transmitter is reporting a low battery	BA	Obj\NoYes
Online Indicates transmitter has reported values within the Sensor Timeout period	S	Obj\NoYes
Sensor Type Sensor type can be set using this object or in the driver's Network Setup object	ST	Obj\ENum; Adjustable Values: 0=Other, 1=HTX, 2=STX, 3=Lux/UV, 4=S2TX
Chan *x* The channel number, *x*, is in the range 1…8	C*x*	Fixed container: *[Meaco v20\Chan]*

Driver Versions

Version	Build Date	Details
1.0	16/11/1999	Driver released
1.1	26/11/1999	V1.1 released Mod: Added formula objects
1.2	08/11/2013	V1.2 released Mod: complete re-design based on new protocol. Note: Driver will wipe data when updating from previous version. Mod: Driver will now auto-baud then re-configure receiver for higher baud rate. Mod: New Sensor Types configuration replaces formula
2.0	10/06/2021	V2.0 released Mod: added compatibility for new 'standard' receiver. Mod: New S2TX sensor type Mod: New Unit objects

Next Steps…

If you require help, contact support on 01273 694422 or visit *www.northbt.com/support*

North Building Technologies Ltd
+44 (0) 1273 694422
support@northbt.com
www.northbt.com

Author: JF
Checked by: BS

Document issued 04/02/2025.