SERIES 101T

MOISTURE ANALYZER
USER MANUAL

INDEX

APPENDIX

1. INTRODUCTION

The ***NYAD*** *101T SERIES MOISTURE ANALYZERS* have the following features:

a) Three selectable units of measurement:

1. Dew point in °C.
2. Dew point in °F.
3. Concentration parts per million by volume (ppm).

Note: Concentration can also be configured to read in lbs per million standard cubic feet (lbs/MMSCF).

b) Two adjustable alarm points.

c) Analog output (0-5VDC or 4-20mA) with adjustable zero and span. Other analog outputs (0-1 VDC and 0-10 VDC) and digital output (RS232 or RS485) are available.

d) An adjustable pressure constant for correcting concentration units (ppm) for sample operating pressure.

e) Selectable field calibration. Certain versions have this calibration (CAL) feature to allow for calibration in the field against a known standard.

f) A selectable diagnostic tool. The moisture sensor's signal frequency is displayed for diagnostic purpose.

The ***NYAD*** *MOISTURE PROBE* contains a solid-state memory. Each individual probe has unique calibration data (the response of moisture content to electrical output signal). This calibration data is programmed into the probes memory. When a probe is connected to an instrument and power is applied, this calibration data is automatically transferred into the instrument's data memory.

This feature allows any NYAD SERIES 101T probe to be used with any ***NYAD*** *SERIES 101* instruments. An important feature when recalibration is required or when multipoint measurements are to be made.

NOTE: FACTORY RECALIBRATION OF THE PROBE IS RECOMMENDED EVERY *TWELVE MONTHS.*

2. INSTALLATION

a) The moisture probe may be installed directly into the sample stream through a ½ inch NPT adapter (see Fig.1). The depth into the sample stream can be adjusted at initial installation before making-up the compression fitting.

When installation into the sample stream is impractical or not advisable (for reasons of high temperature or when installation of protective filter (coalescing or similar) are required, then the moisture probes may be installed in bypass flow cells (see Fig.1). When moisture probes are installed in bypass flow cells, the sample flow rate should be set between 250 and 500 cc per minute.

b) Connect the signal cable from the instrument to the mating connector on the probe.

Note: The probe can be installed using a maximum cable length of fifteen (15) feet. If a greater length of cable is required, up to a maximum of one thousand (1,000) feet, then follow the procedure in Section 15.

c) Connect the instrument to a voltage source.

Note: Instruments are configured with 115 VAC and 220 VAC. Other specific voltage source is available. ENSURE THE

CORRECT VOLTAGE IS APPLIED. CONNECTING TO A VOLTAGE OTHER THAN THAT SPECIFIED MAY CAUSE DAMAGE.

d) Turn on the power switch. The ***NYAD*** *SERIES 101T MOISTURE ANALYZER* will cycle through its startup routine (see Section 3). The routine is complete when an LED, above the display, illuminates indicating the currently selected operating units and the current moisture measurement is displayed

3. STARTUP ROUTINE

After the instrument and the probe have been installed, connected and power applied, the instrument will proceed through it's startup routine with the display and indicating LED's stepping through the following sequence.

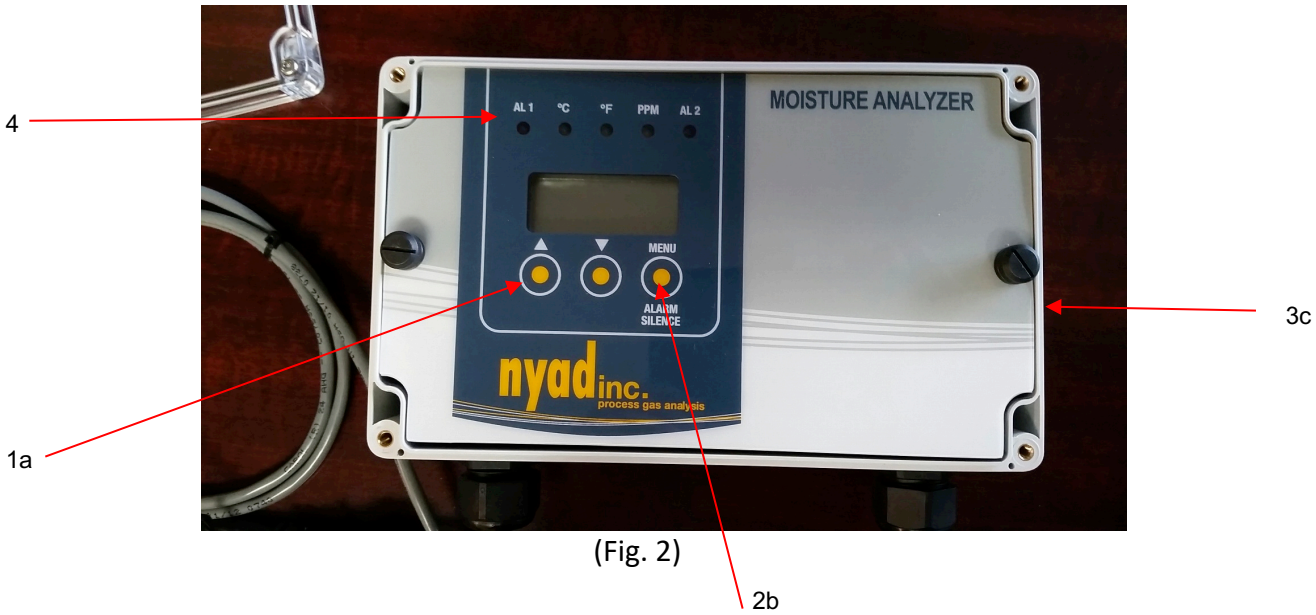
Note: Each step is displayed for approximately one second.

a)	All display segments ON – all LED indicators ON. This tests the display and LED's to ensure all are working.
b)	"NYAD" is displayed.
c)	Operating System Version
d)	**"EE 2" is displayed:** Indicates processor trying to read external memory for probe calibration data. If data is found in memory EE 2 on the display, proceed to step 3.7. If no external memory is found on the display, proceed to step 3.5.
e)	**"EE 1" is displayed:** Indicates processor trying to read redundant internal memory. If no data is found there, the processor turns to internal memory.
f)	**"INT" is displayed:** Indicates all operating data is being taken from internal memory. This will be followed by the internal memory default "9999".
g)	**"A four figure number is displayed:** This is the last four digits of the serial number of the moisture probe that has it's calibration data transferred into the instrument data memory.
h)	**"Erop" is displayed:** Indicates output is out of range. See Section 7 "Setting Analog Output "OUT" (oPHi and oPLo).

On completion of the startup routine the measured moisture value is displayed in units of Dew point either °C, °F, or concentration PPM, indicated by one of the three yellow LED's located directly above the display panel. If any alarm condition exists, this will be indicated by one or both of the red LED's (Al 1 or Al 2). The alarm condition will indicate six seconds the measured value is displayed.

4. FRONT PANEL CONTROLS

Front Panel Controls permit the selection of functions and changes to be made to units, alarm setpoints, output span, etc. (See Fig 2).



(Fig. 2)

The following switches are available on the front panel:

1)	UP/UNITS - DOWN - Toggle Switch
2)	MODE - Push Button Switch
3)	POWER - On/Off Switch
	(Power Switch is not included on OEM model MA-120)
4)	LED Settings

These switches control the following:

a) UP/UNITS - DOWN

	Changes Selected Function
a)	Displayed Units (°C, °F or PPM)
b)	Alarm Setpoints
c)	Toggle Hi and Lo
d)	Analog Output Span
e)	Pressure constant (PPM only)
f)	Calibration Correction Factor

b) MODE

MODE Selects Functions in the following order:		
1) Depress Once	Alarm 1	"Al 1" for 1 second, then setpoint displayed. See Section 6 for changing "Al `" setpoint.
2) Depress Twice	Toggle Function	"Al 1t" for 1 second, then setpoint displayed. See Section 6 for changing "Al 1t" setpoint.
3) Depress Three Times	Alarm 2	"Al 2" for 1 second, then setpoint displayed. See Section 6 for changing "Al 2" setpoint.
4) Depress Four Times	Toggle Function	"A2 2t" for 1 second, then setpoint displayed. See Section 6 for changing "A2 2t" setpoint.
5) Depress Five Times	Analog Output "Hi"	"oPHi" for 1 second, then the Hi value (Hi corresponds to span on analog range). See Section 7 for changing "Hi" values.
6) Depress Six Times	Analog Output "Lo"	"oPLo" for 1 second, then the Lo value (Lo corresponds to zero on analog range). See Section 7 for changing "Lo" values.
7) Depress Seven Times	Pressure Output	"CON" use only if PPM (concentration is selected). See Section 8 for changing "CON" value.
8) Depress Eight Times	Calibration Function	"CAL" for field calibration. See Section 9 for changing "CAL" value.

Note: Note all models have these functions.

c) **POWER** Power On – Off.

(see Section 2)
OEM Model MA-120N does not have power switch on front panel.

5. SELECTED MEASURED UNITS

The current units being measured are displayed and indicated by the illuminated yellow LED located above the display panel (see Fig.2. 4).

Each time the instrument is powered up, the units indicated and displayed are the units that were in service at the time the instrument was powered down.

a) To change unit selection:

1) Momentarily depress UP/UNITS. The LED indicators will sequence through °C, °F, and PPM, until the desired units are reached. ****(If no LED's are illuminated, the four-figure number displayed is the frequency corresponding to the measured value. This is used for diagnostic purposes).

6. SETTING ALARM POINTS ("Al 1 AND Al 2")

All Series 101T models have two alarm indication points, Al 1 and Al 2, indicated by the red LED's located above the display (see Fig. 2 #4).

All units have two alarm relays as standard (SPDT) 1A @ 120V. There are no signal or voltage through the relays, just open contacts. The alarm relays are energized when the measured value of moisture exceeds the setpoint value of Al 1 and Al 2 for a sustained period of about six seconds.

a) Find the current Alarm Setpoint values for the selected units

1) Momentarily depress MODE once "Al 1" will be displayed, this will be followed, in about one second, by the alarm 1 setpoint value. If no change is made to the setpoint, then in about six seconds "DISP" will flash followed by the measured moisture value

2) Momentarily depress MODE three times "A1 2" will be displayed, this will be followed, in about one second, by the alarm 2 setpoint value. If no change is made to the setpoint, then in about six seconds "DISP" will flash followed by the measured moisture value.

b) Changing Alarm Setpoints:

1) Depress MODE switch momentarily until "A1 1" is displayed followed by alarm 1 setpoint value. To increase the value, press UP, to decrease press DOWN. A momentary press and release will change the value by one unit. A press and release followed quickly by a press and hold will scroll the value until the switch is released. When desired value is reached, no further action is necessary.

2) After about six seconds, the display will return to the measured moisture value and the new alarm setpoint will be placed in memory.

3) Depress MODE switch momentarily until "Al 2" is displayed followed by the alarm 2 setpoint value. Proceed as listed above in a) and b) to find or change the value of alarm 2 setpoint.

c) Toggle Function:

The Nyad Series 101T moisture analyzer is quipped with a toggle function ("A1 1t" and "A2 2t"). Set this for Hi when alarm is to detect increasing moisture and Lo when detecting decreasing moisture.

d) To determine the current settings for "A1 1t and A2 2t".

1) Depress MODE two times "A1 1t" will be displayed, then in about 1 second, Hi will be displayed. Use the UP/UNITS DOWN switch to toggle from Hi to Lo.

2) Depress MODE four times "A2 2t" will be displayed, then in about 1 second, Hi will be displayed. Use the UP/UNITS DOWN switch to toggle from Hi to Lo.

Note: Alarm setpoints are set in the units in service, (°C, °F, or PPM) at the time of making setpoint selection and are unique to those units and independent of other units.

For example: If a change has been made to A1 1 setpoint value, from the default value of -60 °C (for default values see Section 10), to a value of –100°C, the Al 1 value in °F will remain at the default value of –80 °F.

7. AUDIBLE ALARM FEATURE

1) To silence alarm, use the alarm ON/OFF switch located on the front panel of the instrument. This switch is to silence the alarm only. To power unit on and off, refer to the front panel on/off switch.

2) The audible alarm is setup for **AL2** to sound when it exceeds the desired setpoint value. You have the option to set either AL 1 or AL 2 as your Lo or High alarms.

Note: The two-channel moisture and carbon monoxide monitors share the same power. For this reason, the moisture monitor must be powered on for the CO audible alarm to sound.

8. SETTING ANALOG OUTPUT ("OPHI AND OPLO")

All instruments feature an analog output. On standard units, this output is configured as 0-5 VDC and 4-20mA. Other analog outputs and digital outputs are available and can be factory set as 0-1 VDC or 0-10 VDC and RS232 or RS485. The analog output is linearly proportional to the measured moisture value.

a) To find the current Analog Output Zero and Span settings for the selected units.

1) Momentarily depress MODE five times "oPHi" will be displayed followed, in about one second, by the current span value corresponding to 5VDC or 20mA Depress MODE again, "oPLo" will be displayed, in about one second, by the current zero value corresponding to (0 VDC or 4mA).

2) If no change is required, in about six seconds "DISP" will be displayed and return to the current measured moisture value.

b) To Change the Analog Output Zero and Span settings for the selected units:

1) Momentarily depress MODE five times "oPHi" will be displayed followed, in about one second, by the current "HI" value corresponding to 5 VDC or 20mA. To increase the value, press UP, to decrease press DOWN. A momentary press and release will change the value by one unit. A press and release quickly followed by a press and hold will scroll the value until the switch is released.

2) Momentarily depress MODE six time "oPLo" will be displayed followed by the current "Lo" value corresponding to 0 VDC or 4mA. To increase the value, press UP, to decrease press DOWN. A momentary press and release will change the value by one unit. A press and release quickly followed by a press and hold will scroll the value until the switch is released.

3) After changes are made, in about six seconds, "DISP" will flash followed by the current measured moisture value.

Digital Output

The NYAD Series 101T family of moisture analyzers features an optional digital output port. The user has a choice of format either RS-232 or RS-485. The RS-232 option can be accessed from a standard DB-9 connector on the rear panel for example MA160N and the RS-485 version uses a 5 pin Amphenol connector also located on the rear panel. The pinout of the RS-485 connector is shown below:

For convenience, a short cable is also provided that brings the output to a three-position terminal strip.

To activate the digital output, selection is made from the front panel of the instrument. Turn on the POWER switch, then press the MODE button six times. The display will show PORT. Now press the UP switch and Select 0485 by pressing MODE. For RS-232, select 0232.

The digital output is now activated and a constant data stream will be sent every second with the following information:

Data Output format:

$UNITS, Display data, Output, ALARM1, ALARM2, ERROR#1, Line_checksum<CR><LF>

Example: $CO, 1.4, 0.238, 0, 0, 0, 1177<CR><LF>

9. SETTING THE PRESSURE CONSTANT ("CON")

To establish moisture content in terms of concentration ppm requires that the operating pressure of the sample be known and factored into the appropriate calculation.

The NYAD 101T SERIES MOISTURE ANALYZER allows the operator to program the known system operating pressure into memory and thus read ppm directly.

The factory setting for pressure constant (see Section 10) is set assuming operation at atmospheric pressure of 15 psia (14.7 to the nearest integer).

If the sample pressure is different from 14.7 psia, then the value can be changed using the following procedure.

a) To find the current pressure constant:

1) Momentarily depress the MODE seven times "CON" will be displayed followed, in about one second by the current pressure constant. If no change is made to the pressure constant, then in about six seconds "DISP" will flash followed by the current measured value.

b) To change the current pressure constant:

1) Momentarily depress the MODE seven times "CON" will be displayed followed in about one second by the current pressure constant value. To increase pressure constant value, press UP, to decrease press DOWN. A momentary press and release will change the value by one unit. A press and release followed quickly by a press and hold will scroll the value until released. When the desired value is reached, no further action is necessary.

2) After about six seconds "DISP" will flash and return to the measured value of concentration in units of ppm and the new pressure constant will be in memory.

10. CALIBRATION FEATURE ("CAL")

This feature allows the NYAD 101T SERIES MOISTURE ANALYZERS to be calibrated in the field by permitting the operator to program a calibration correction factor into memory.

To use this feature, compare the Dew point indication of the instrument, in °C against a standard.

Note: When the "CAL" feature is selected the value displayed is always in °C irrespective of the units indicated.

This standard can be a second calibrated instrument measuring the same sample or a certified calibration gas of known dew point.

Note: ***If a certified calibration gas is used, the NYAD Moisture Probe should be exposed to the calibration*** **gas for at least one hour in a flow stream** ***of about half a liter per minute.***

All instruments are factory set with a "0" correction factor.

If, on comparison with the standard, a discrepancy between the standard and the measured moisture value is observed, then a calibration correction factor can be programmed into memory as follows:

a) **To find the current calibration correction factor:**

1) Momentarily depress MODE eight times "CAL" will be displayed followed in about one second by the current correction factor. If no change is made to the correction factor, then in about six seconds "DISP" will flash followed by the current measured moisture value.

b) **To change the current calibration correction factor:**

1) Establish the difference between the standard and the dew point measured value (either positive or negative.)

2) Momentarily depress MODE eight times "CAL" will be displayed followed in about one second by the current calibration correction factor. If the indicated dew point is higher (wetter) than the standard, then the dew point needs to be lowered by the difference.

Example: If the standard dew point is -40°C and the NYAD Series 101T indicates -38°C, the indicated dew point needs to be lowered by 2°C. If the current correction factor is 0, change the factor to –2 by pressing DOWN. The Nyad Series 101T indicated dew point should now read -40°C.

If the indicated dew point is lower (dryer) than the standard, then the dew point needs to be lowered by the difference.

Example: If the standard dew point is -40°C and the NYAD Series 101T indicates -42°C the indicated dew point needs to be raised by 2°C. If the current correction factor is 0, change the factor to +2 by pressing UP. The Nyad Series 101T indicated dew point should now read -40°C.

3) Momentarily depress MODE once, the new calibration correction factor will be entered in memory. "DISP" will flash followed by the new corrected measured dew point.

11. DEFAULT UNITS

NYAD SERIES 101T MOISTURE ANALYZERS are preset at the factory with the following default values:

Function	°C	°F	PPMV	Frequency (Hz)
Al 1	-60	-80	10	1000
Al 2	0	32	100	7000
oPLo	-80	-100	0	0
oPHi	0	32	100	0000
CON	14.7	14.7	14.7	14.7
CAL	0			

12. MAINTENANCE

Primary maintenance to the Nyad Series 101T Moisture Analyzer is the routine recalibration of the moisture probe. Factory recalibration should be carried out every twelve months.

Although field calibration is available as a temporary measure, as described in Section 9, factory recalibration is the recommended routine procedure. Field calibration checks and corrects the indicated dew point at one point in a range of -100□C to +20□C, factory calibration is across the entire range. The sensor performance under certain conditions, can be effected by fine particulate or non-conducting oil build up which can be cleaned off in the field. If the sensor is damaged, the probe should be returned to the factory for repair. The mounting of the sensor in the probe is designed for convenient factory replacement. This design feature enables the sensor to be replaced without the probe body being discarded.

a) **Moisture Probe – To replace with a recalibrated probe:**

1) For NYAD101T SERIES MOISTURE ANALYZERS in critical service it is recommended that a spare probe be held in stock and returned to the factory for recalibration about 6 weeks before the probe in service is due for calibration.

2) On receipt of recalibrated probe, note the serial number. Power down the instrument, remove the probe in service from the sample stream or flow cell and replace with the recalibrated probe. Power up the instrument. The instrument will step through the startup routine (described in Section 3). After "EE-2" is displayed a four-digit number is displayed. This will be the last four digits of the serial number previously noted. This will indicate that the calibration data from the recalibrated probe has transferred into the instrument data memory.

   Measured moisture value will be displayed. This value will be the moisture value of the ambient environment that the probe was in at the time of making the replacement. Allow at least one hour or more, depending on the dryness of the sample, for the moisture sensor to reach equilibrium with the sample. Equilibrium is reached when the displayed measured moisture value stabilizes.

b) **Moisture Probe Maintenance:**

1) Many industrial sample streams (gas or liquid) contain fine particulate matter or non-conducting oils. These will not seriously hinder the sensors performance; however, over time, buildup of this fine particulate matter or non-conducting oil can slow the sensor's response to changes in moisture content.

To remove build up coatings:

Dip and gently agitate the sensing element in a hydrocarbon solvent such as Benzene, Hexane or similar hydrocarbons. If the sensor is coated with water soluble material, distilled water may be used as a cleaning solvent. ***DO NOT USE ALCOHOLS, KETONES OR OTHER OXYGENATED SOLVENTS!***

***Note: Only the sensor end of the probe element (open end with slotted or sintered cap) should be immersed in the solvent*.**

c) **Moisture Probe Calibration:**

Please visit our webpage www.nyad.com/recalibration-services for details.

13. BATTERY OPERATION

The NYAD SERIES 101T MOISTURE ANALYZERS can be operated from an internal 12 VDC Battery Pack on Model MA-160N only.

It is recommended, however, when the unit is being used on battery power and is not being specifically observed, the power switch on the front panel is "OFF" This will conserve the battery charge.

Note: When the unit is switched off the moisture probe remains in equilibrium with the sample stream.

It is also recommended that when the battery is on recharge that the unit be switched off with line power connected. This can be accomplished when the unit is not being observed, for example overnight or over a weekend.

The Nyad Series 101T contains an electronic charging circuit that prevents damage to the battery due to overcharging.

a) The Microprocessor is programmed to sense the power input.

1) When power is being supplied from the battery pack the alarm relays and alarm LED's will not activate and, if supplied, the 4-20mA current output will not be available. The analog voltage output (0-5 VDC) and the liquid crystal display, however, do remain available. When line power is applied the relay circuitry, the alarm LED's and the 4-20mA output are automatically restored.

2) When the battery voltage drops below a predetermined level, the display flashes "BATT" and alternates between this and the measured moisture value for a short period of time, approximately 30 to 45 minutes, indicating that battery recharge is required. If the instrument is not placed on recharge during this 30 to 45-minute period, the system will automatically shut down.

Charging time from the low battery level to full charge is 6 to 8 hours.

Operating time on a fully charged battery is 10 to 12 hours of continuous operation.

14. ERROR CODES

CODE	MESSAGE	POSSIBLE CAUSE
E-Lo	No Signal from Moisture probe	1. Bad signal cable 2. Sensor Short or Open 3. Receiver malfunction 4. Sensor needs calibration
Er-Hi	Signal frequency greater than Calibration table values	1. Sample too dry 2. Sensor needs calibration
Er-Lo	Signal frequency greater than Calibration table values	1. Sample too wet 2. Sensor needs calibration
EroP	Operator Error	1. Output "oPHi" is out of range

15. TROUBLE SHOOTING

SYMPTOM	CAUSE	REMEDY
Display "hang up" during operation	Noise induced program interruption	Reset unit by turning power off and on
Display garbled	Faulty display	Power off and on. On power up, observe display. First display all segments. If all display segments are not functioning, replace the display.
Display shows E-Lo	Probe disconnected, bad cable or sensor failure	Check probe connection. If OK return probe and cable to factory for evaluation
Display shows Er-Lo	Sample dewpoint higher than calibration range of sensor	Check for wet sample. Dry gas should bring unit back on scale.
Display shows Er-Hi	Sample dewpoint lower than calibration range sensor	Expose sensor to wet sample. If normal operation resumes, calibration recommended.

16. USE OF NONSTANDARD PROBES

Unless otherwise specified, the NYAD SERIES 101T MOISTURE ANALYZERS are supplied with five feet of cable for interconnecting the moisture probe with the instrument. This cable has six conductors, two for carrying the frequency signal corresponding to the moisture measurement and four for transferring the individual sensor calibration data to the instrument's data memory. This six conductor cable can, on request, be supplied in lengths up to fifteen feet.

If the system installation requires that the moisture probe is situated more than fifteen feet from the instrument, then the moisture probe is connected to the instrument by a shielded, two conductor cable. This cable is normally supplied and field run by the customer. In this case, a five foot, six conductor download cable is provided by NYAD for the startup routine to be completed (see Section 3) prior to the probe being installed at it's on-line location. Following a successful startup, the download cable is replaced by the permanent two conductor cable for on-line operation.

a) To download probe calibration data into instrument internal memory when probes are remote from instrument by more than fifteen feet, do the following:

1) After field installation is complete and before powering up instrument disconnect probe from field run cable "B" (see FIG. 3) and extract probe from field location, move probe to instrument. Note the probe serial number that is etched on the probe body.

2) Disconnect field run cable "B" from instrument and connect download cable "A" to instrument.

3) Connect probe to download cable "A" (see FIG. 3) and power up instrument. Instrument will proceed through STARTUP ROUTINE (see Section 3). Check that serial number displayed is the same as that noted. On completion of Startup Routine, calibration data loaded into the instrument's internal memory and probe can be returned to the field.

4) Power down the instrument.

a) Disconnect probe from download cable “A” and disconnect download cable from instrument. Store download cable in a safe location adjacent to the instrument. Reconnect field run cable “B” to instrument.

b) Relocate probe to field location and insert into sample stream or flow cell and reconnect field run cable “B” to probe.

c) Return to instrument and power up. Instrument will proceed through STARTUP ROUTINE (see Section 3).

Measured moisture value of the ambient environment that the probe was in at the time of replacing the probe in the field. Allow at least one hour or more, depending on the dryness of the sample, for the moisture sensor to reach equilibrium with the sample. Equilibrium is reached when the displayed measured moisture value stabilizes.

MOISTURE CONVERSION TABLE

Dewpoint °C	Dewpoint °F	Vapor Pressure (Water/Ice in Equilibrium) mm of Mercury	PPM on Volume Basis at 760 mm of Hg Pressure	% Relative Humidity at 70°F	PPM on Weight Basis in Air
−110	−166	.0000010	.00132	.0000053	.00082
−108	−162	.0000018	.00237	.0000096	.0015
−106	−159	.0000028	.00368	.000015	.0023
−104	−155	.0000043	.00566	.000023	.0035
−102	−152	.0000065	.00855	.000035	.0053
−100	−148	.0000099	.0130	.000053	.0081
− 98	−144	.000015	.0197	.000080	.012
− 96	−141	.000022	.0289	.00012	.018
− 94	−137	.000033	.0434	.00018	.027
− 92	−134	.000048	.0632	.00026	.039
− 90	−130	.000070	.0921	.00037	.057
− 88	−126	.00010	.132	.00054	.082
− 86	−123	.00014	.184	.00075	.11
− 84	−119	.00020	.263	.00107	.16
− 82	−116	.00029	.382	.00155	.24
− 80	−112	.00040	.562	.00214	.33
− 78	−108	.00056	.737	.00300	.46
− 76	−105	.00077	1.01	.00410	.63
− 74	−101	.00105	1.38	.00559	.86
− 72	− 98	.00143	1.88	.00762	1.17
− 70	− 94	.00194	2.55	.0104	1.58
− 68	− 90	.00261	3.43	.0140	2.13
− 66	− 87	.00349	4.59	.0187	2.84
− 64	− 83	.00464	6.11	.0248	3.79
− 62	− 80	.00614	8.08	.0328	5.01
− 60	− 76	.00808	10.6	.0430	6.59
− 58	− 72	.0106	13.9	.0565	8.63
− 56	− 69	.0138	18.2	.0735	11.3
− 54	− 65	.0178	23.4	.0948	14.5
− 52	− 62	.0230	30.3	.123	18.8
− 50	− 58	.0295	38.8	.157	24.1
− 48	− 54	.0378	49.7	.202	30.9
− 46	− 51	.0481	63.3	.257	39.3
− 44	− 47	.0609	80.0	.325	49.7
− 42	− 44	.0768	101.	.410	62.7
− 40	− 40	.0966	127.	.516	78.9
− 38	− 36	.1209	159.	.644	98.6
− 36	− 33	.1507	198.	.804	122.9
− 34	− 29	.1873	246.	1.00	152.
− 32	− 26	.2318	305.	1.24	189.
− 30	− 22	.2859	376.	1.52	234.
− 28	− 18	.351	462.	1.88	287.
− 26	− 15	.430	566.	2.30	351.
− 24	− 11	.526	692.	2.81	430.
− 22	− 8	.640	842.	3.41	523.
− 20	− 4	.776	1020.	4.13	633.
− 18	0	.939	1240.	5.00	770.
− 16	+ 3	1.132	1490.	6.03	925.
− 14	+ 7	1.361	1790.	7.25	1110.
− 12	+ 10	1.632	2150.	8.69	1335.
− 10	+ 14	1.950	2570.	10.4	1596.
− 8	+ 18	2.326	3060.	12.4	1900.
− 6	+ 21	2.765	3640.	14.7	2260.
− 4	+ 25	3.280	4320.	17.5	2680.
− 2	+ 28	3.880	5100.	20.7	3170.
0	+ 32	4.579	6020.	24.4	3640.
+ 2	+ 36	5.294	6970.	28.2	4330.
+ 4	+ 39	6.101	8030.	32.5	4990.
+ 6	+ 43	7.013	9230.	37.4	5730.
+ 8	+ 46	8.045	10590.	42.9	6580.
+ 10	+ 50	9.029	12120.	49.1	7530.
+ 12	+ 54	10.52	13840.	56.1	8600.
+ 14	+ 57	11.99	15780	63.9	9800.
+ 16	+ 61	13.63	17930.	72.6	11140.
+ 18	+ 64	15.48	20370.	82.5	12650.
+ 20	+ 68	17.54	23080.	93.5	14330.
+ 22	+ 71.5	19.827	26088.		16699.
+ 24	+ 75	22.377	29443.		18847.
+ 26	+ 79	25.209	33169.		21232.
+ 28	+ 82	28.349	37301.		23877.
+ 30	+ 86	31.824	41874.		26804.

SPECIFICATIONS

Model Numbers	MA-120n (OEM), MA-130N (Rack Mount) MA-140N (Panel Mount, MA-150 (Nema 4), MA-160N Portable, MA-70 (Nema 7X)
Units (Premium Range)	Degrees C, F, or PPM
(Standard Range)	Degrees C, F, or Temperature

Standard

Display	4 Digit LCD, 0.5" High
Alarm	Dual Dry Relay Contacts (SPDT 1A@120V)
Analog Output	0-5VDC or 4-20mA (Adjustable zero and span)
Power	120VAC 50/60 Hz, 1W Max, 220V
Memory	Non-Volatile Data Memory
Calibration	NIST Traceable

Options

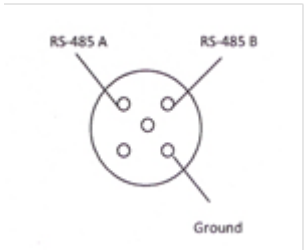
Audible Alarm	
Digital Output	RS232, RS485
Power	12V

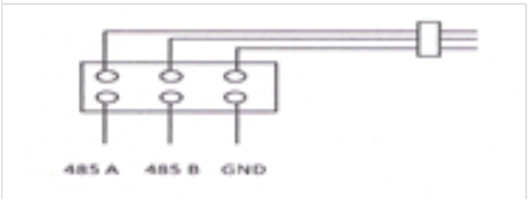
Sensor

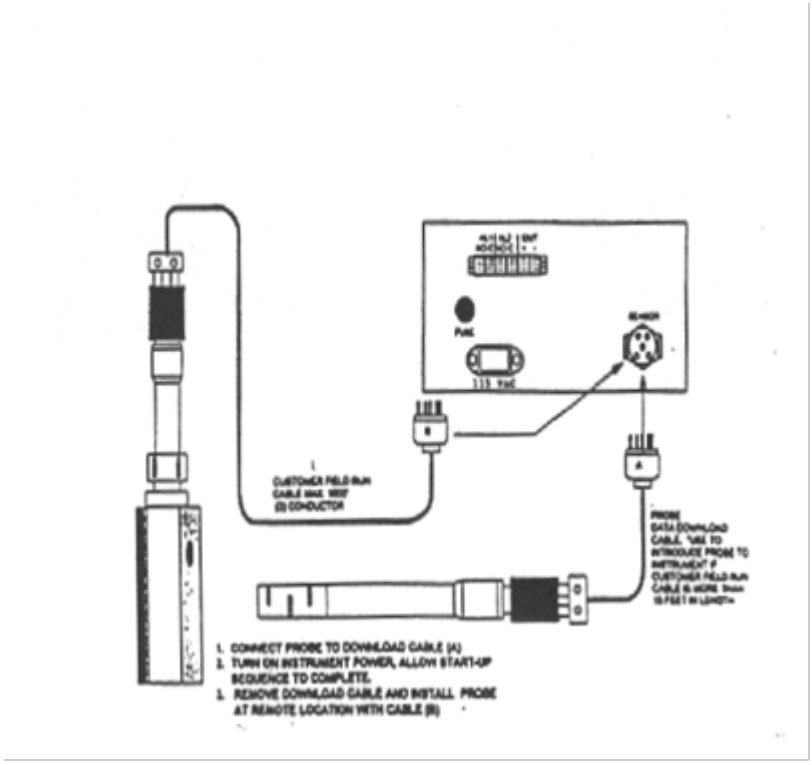
Type	NYAD A.C.T., Series 50
Standard Range	-50°F to +68°F
Premium Range	-148°F to +68°F Dew/Frostpoint
Accuracy	±2°C
Repeatability	±0.5°C
Operating Temp	-130° to +70°C
Pressure Rating Interval	2000 psig. High Pressure 7,000 (Optional)
Calibration	Every 12 Months

Enclosures

OEM	**5.75"Wx6.75"Hx2.4"D**
NEMA-4	**9.5"W x 6.25"H x 3.5"D**
Portable	**8.5"Wx3"Hx9.25"D**
Panel	**10"W x 5.25"H x 5"D**
Rack	**19"W x 5.25"H x 11.5"D**


RS-485 A
RS-485 B
Ground


485 A
485 B
GND


1. CONNECT PROBE TO DOWNLOAD CABLE (A)
2. TURN ON INSTRUMENT POWER, ALLOW START-UP SEQUENCE TO COMPLETE.
3. REMOVE DOWNLOAD CABLE AND INSTALL PROBE AT REMOTE LOCATION WITH CABLE (B)

WARRANTY

WARRANTY TERMS

Nyad, Inc. warrants to the original consumer purchaser that all parts used in the construction or fabrication of the Nyad Equipment will be free from defects in materials and factory workmanship, under normal use and service for ***five years*** from the date of delivery.

Warranty coverage provides the necessary repairs or parts replacement found by Nyad, Inc. to be defective due to bad workmanship or faulty materials.

LIMITATIONS OF WARRANTY

The Nyad Equipment is restricted to inspection (FOB the Factory) before warranty is determined, unless other arrangements have been made by Nyad and the original consumer purchaser.

This warranty does not apply to routine service/maintenance, repairs and routine calibration of the moisture sensor every twelve (12) months in accordance with manufacturer's recommendation, or replacements made necessary by fire or water damage, or accident to or improper installation by others, alteration, misuse or abuse to the Nyad Equipment.

This warranty does not cover labor charges or cost incurred for time and expense by other service agencies or personnel involved in maintaining the Nyad Equipment.

Application of this Warranty is further conditioned upon the following:

Installation. The Nyad Equipment must be properly installed in accordance with Nyad's installation procedures and instructions.

Proper Maintenance and Operation. The Nyad Equipment must be properly maintained and operated in accordance with Nyad's maintenance and operating procedures. All service parts must be acquired from Nyad or its authorized representative.

No Alteration. The Nyad Equipment must not have been modified or altered from its original conditions at the date of delivery or installation.

Failure to comply with any of these conditions will void this Warranty.

RETURN POLICY

Before returning any items (except for recalibration service and repairs) you must call 925 270-3971 8:30 a.m. – 5:00 p.m. PST. Monday through Friday for approval.

Product may be returned for a full refund/credit within 30 days from the date that Nyad originally shipped and must be returned in their original new condition. Exceptions for special order. Returns for special orders will have 30% restocking fee and must be approved.

Items returned in damaged or altered conditions which cannot be resold as new will have a 30% restocking fee.

All returned items are subject to inspection for use and damage before credit is issued. Returns may incur additional charges if product is returned in damaged conditions.

Manufacture Warranty/Defective Claims - You may return product to us for rework, exchange and/or request a full refund/credit. Request must be made from the original purchaser. Upon receipt of a returned item, Nyad will evaluate and determine the warranty claim.

Damaged Items – It is your responsibility to inspect your packages for damages/defect on delivery. If product is damaged in transit to you, we must be notified immediately (within 24 hours) so that we can submit a claim to our freight carrier.

Lost Packages – Lost Packages must be reported within 30 days of
shipment date and verification from the freight carrier that product has not been delivered.

Please contact or email us for further important instructions on filing a lost or damaged package claim.

TECHNICAL SUPPORT

Nyad, Inc. will offer Technical Support via telephone or email. All technical support shall be related to the Nyad Equipment only. Any other technical issues involving other products and services to the Nyad Equipment will not be the responsibility of Nyad, Inc.; however, our technical support team will offer their best knowledge and support involved in the Nyad Equipment.

Warranty/Technical Support:

Ph (925) 270-3971
Contact: Carissa Harrild
Email: sales@nyad.com
www.nyad.com