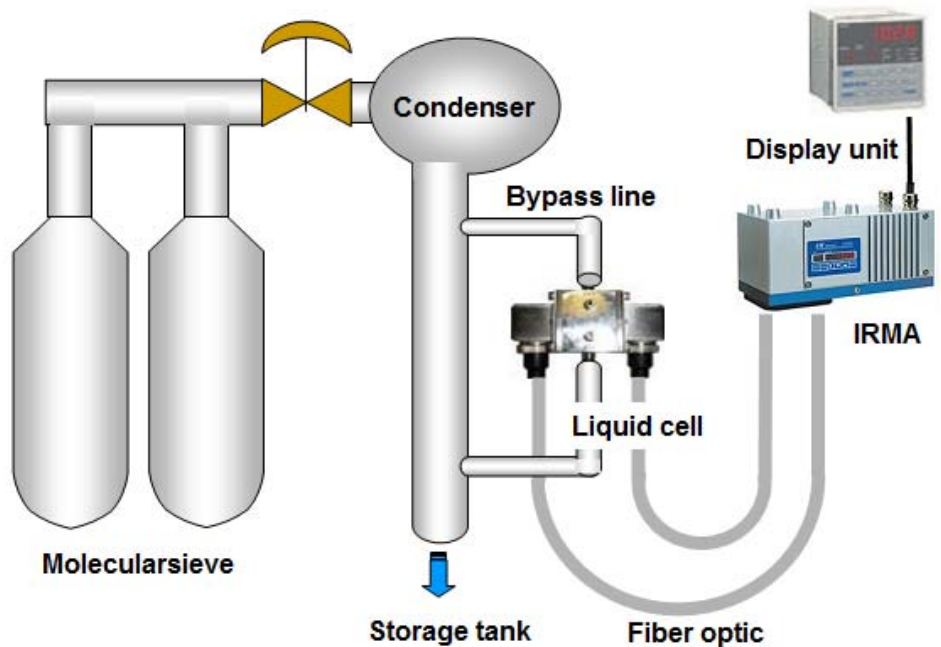# CHINO

Chemical

**Application notes**

## Moisture in 200 proof ethanol

The CHINO IM series is an on-line multi wavelength liquid analyzer utilizing infrared absorption technology to measure percent water in 200 Proof Ethanol. The standard moisture range of the unit is 0.00% to 2.00% with a 0.01% resolution. Signal processing capabilities are built into the compact designed detector unit for easy installation and operation.

The System is provided with a NIR measuring Liquid Flow Cell connected to a pair of 20 meters (65 feet) fiber optic cables. Since the fibers contain no metal or electrically conductive material, the measuring Liquid Flow Cell is electrically isolated from the sensor processing electronics. This galvanic isolation long fibers is sufficient to move the processing unit out of the Hazardous rated area.

The detector can be used by itself or connected to a PC or DCS plant control system. Both analog (4 to 20mA DC) and digital (RS-485 or LAN Ethernet) outputs are provided. A remote setting display unit, which connects up to 9 detector units, can be used to set various detector functions and also displays measured values.

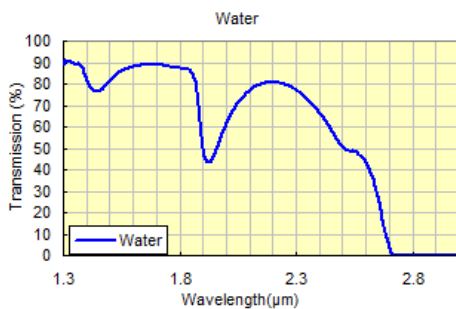| Products / Location | Parameter | Range |
|---|---|---|
| Ethanol | Moisture | 190 to 200 prrof |
| Ethanol | Moisture | 198 to 200 proof |
| | | |
| | | |

## Recommended model / Item

* Transmission fiber type moisture unit
   Model : IRMA2100S      Qty : 1
* Fiber optic cable (20m)
   Model : IR-HNL20       Qty : 2
* Measuring liquid cell
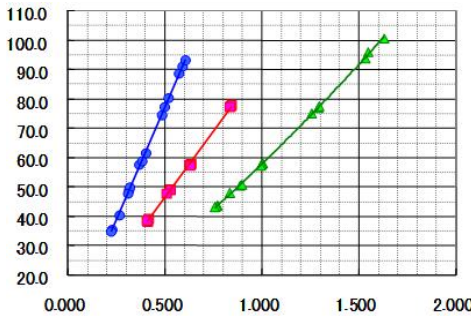   Model : IR-WCC          Qty : 1

## Installation

Typical installation in an ethanol plant is to have a bypass line going through Liquid Flow Cell between Condenser and the product storage.  With the long fiber optic cables, it is possible to install the unit itself away from the location of Liquid Flow Cell where it is hazardous rated area in most of cases.

## Absorption characteristic



Moisture(water) has a unique infrared absorption spectrum regions. Water absorbs at wavelength of 1.43, 1.94, and 3 micrometers.

## Calibration curve



Calibration curve is a correlation between moisture determined by customer's reference instrument and IR absorption measured by IRMA.

[Basic sample test for moisture]

1. Prepare samples with various moisture content
2. Show each sample to IRMA and record absorption level
3. As conducting step-2, determine moisture level with your reference instrument
4. Put all data points on a X/Y graph and see if there's a correlation
Note: Reference instrument may vary depending on the method
(by volume or weight).


Mirror type


Fiber type


Liquid cell type


Setting & Display unit

## Contact

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