# HygroSmart I7000XP

# Interchangeable Sensor for Relative Humidity and Temperature

The HygroSmart I7000XP sensor is designed to accurately and reliably measure relative humidity and temperature in a wide spectrum of industrial and heavy industrial applications. The sensor uses the latest HygroSmart 3 technology, providing excellent performance across a wide customer measurement range and giving rapid field interchangeability to minimize customer maintenance costs on all Michell HygroSmart based probes and transmitters.



#### **Highlights**

- · Relative humidity and temperature measurement
- Accuracy ±1% RH
- RH voltage output
- 30 second field interchangeability
- Traceable 5-point calibration certificate
- · Ultra high resolution electronics
- Compact 14mm space envelope
- Suitable for integration into all HygroSmart transmitters and probes
- Operating range –40 to +85°C
- Stability ±1% RH per year

# **Applications**

- Food processing
- Pharmaceutical
- Environmental
- Meterological
- Agricultural
- Power
- Energy
- Nuclear
- Paper processing
- Transportation



### **Technical Specifications**

RH measurement range RH accuracy @ 23°C	Performance Specifications	
RH accuracy @ 23°C	·	
RH thermal coefficient  RH resolution  RH resolution  RH measurement response time  RH element and hybrid electronics  RH long term stability  Temperature technology  Temperature measurement range  Temperature accuracy  Temperature resolution  Recommended storage range  Flectrical Specifications  Output signals  White housing: Black housing: Coptional:  Value PT100  Optional:  Digital output signal  Standard: Optional:  Supply voltage range  Temperature output signal  Standard: Optional:  Optional:  Operating Specifications  Housing material  NORYL PPO UL94 VO  Dimensions  Union Specifications  NORYL PPO UL94 VO  L=33mm, Ø14mm  Weight  Signal  Temperature output signal  NORYL PPO UL94 VO  L=33mm, Ø14mm  Weight  Signal  Temperature output signal  Noryl Pins	· ·	
RH resolution  RH measurement response time  RH element and hybrid electronics RH element and hybrid electronics RH long term stability  Temperature technology  Temperature measurement range  Temperature accuracy  Temperature resolution  Recommended storage range  Electrical Specifications  Output signals  White housing: Black housing: O-1 V 0.2-1 V 0.2-1 V  Temperature output signal  Standard: Optional:  Digital output signal  Power consumption  Operating Specifications  Operating Specifications  Operating Specifications  Operating Specifications  Operating Specifications  Operating temperature  -40 to +85°C  -40 to +85°C  -40 to +85°C  Mechanical Specifications  Housing material  NORYL PPO UL94 V0  Dimensions  NORYL PPO UL94 V0  Dimensions  L=33mm, Ø14mm  Weight Electrical connections  7 pins	,	,
RH measurement response time  RH element and hybrid electronics  RH long term stability  Temperature technology  Temperature measurement range  Temperature accuracy  Temperature resolution  Recommended storage range  Flectrical Specifications  Output signals  White housing: Black housing: O-1 V 0.2-1 V 0.2-1 V  Temperature output signal  Standard: Optional:  Digital output signal  Supply voltage range  For your consumption  Operating Specifications  Operating Mechanical Specifications  Housing material  NORYL PPO UL94 VO Dimensions  L=33mm, Ø14mm  Weight  Electrical connections  7 pins		31
RH element and hybrid electronics RH long term stability  Temperature technology  Temperature measurement range  -40 to +85°C  Temperature resolution  Recommended storage range  Electrical Specifications  White housing: Black housing: 0-1 V 0.2-1 V  Temperature output signal  Standard: Optional: 3-wire PT100 No output  Digital output signal  Standard: Supply voltage range  +5 V DC ±1 V  Deparating Specifications  Operating temperature  -40 to +85°C  Mechanical Specifications  Housing material  NORYL PPO UL94 VO  Dimensions  L=33mm, ø14mm  Weight  3g  Flectrical connections  7 pins		
RH long term stability ±1% RH per year  Temperature technology PT100 1/3 DIN*  Temperature measurement range -40 to +85°C  Temperature resolution Infinite  Recommended storage range +10 to +40°C  Electrical Specifications  Output signals  White housing: Black housing: 0-1 V 0.2-1 V  Temperature output signal  Standard: Optional: No output  Digital output signal I²C interface  Supply voltage range +5 V DC ±1 V  Power consumption 300uA @ 5 V  Operating Specifications  Operating temperature -40 to +85°C  Storage temperature -40 to +85°C  Mechanical Specifications  Housing material NORYL PPO UL94 VO  Dimensions L=33mm, ø14mm  Weight 3g  Electrical connections 7 pins		
Temperature technology Temperature measurement range  -40 to +85°C  Temperature accuracy  temperature resolution  Recommended storage range  Flectrical Specifications  Output signals  White housing: Black housing: Black housing: Optional:  Standard: Optional:  Digital output signal  Supply voltage range  +5 V DC ±1 V  Power consumption  Operating Specifications  Operating Specifications  Operating temperature  -40 to +85°C  -40 to +85°C  Mechanical Specifications  Housing material  NORYL PPO UL94 VO  L=33mm, Ø14mm  Weight  Standard: Optional: Noryl PPO UL94 VO  L=33mm, Ø14mm  Weight  Flectrical connections  7 pins	•	
Temperature measurement range		. ,
Temperature accuracy ±0.2°C  Temperature resolution Infinite  Recommended storage range +10 to +40°C  Electrical Specifications  Output signals  White housing: 0-1 V 0.2-1 V 0.2-1 V  Temperature output signal  Standard: 3-wire PT100 No output  Digital output signal I²C interface  Supply voltage range +5 V DC ±1 V  Power consumption 300uA @ 5 V  Operating Specifications  Operating temperature -40 to +85°C  Storage temperature -40 to +85°C  Mechanical Specifications  Housing material NORYL PPO UL94 VO  Dimensions L=33mm, Ø14mm  Weight 3g  Electrical connections 7 pins	. 33	
Temperature resolution  Recommended storage range		
Recommended storage range +10 to +40°C  Electrical Specifications  Output signals  White housing: 0-1 V 0.2-1 V  Temperature output signal Standard: Optional: 3-wire PT100 No output  Digital output signal  Power consumption  Operating Specifications  Operating Specifications  Operating temperature  -40 to +85°C  Storage temperature  -40 to +85°C  Mechanical Specifications  Housing material  NORYL PPO UL94 VO  L=33mm, Ø14mm  Weight  3g  Electrical connections  7 pins		
Electrical Specifications  Output signals  White housing: 0-1 V 0.2-1 V  0.2-1 V  Temperature output signal  Standard: 3-wire PT100 No output  Digital output signal  Digital output signal  Electrical Supply voltage range  +5 V DC ±1 V  A 300uA @ 5 V  Operating Specifications  Operating Specifications  Operating temperature  -40 to +85°C  -40 to +85°C  Mechanical Specifications  Housing material  NORYL PPO UL94 VO  Dimensions  L=33mm, Ø14mm  Weight  3g  Electrical connections  7 pins	•	
Output signals  White housing: D-1 V Black housing: 0.2-1 V  Temperature output signal  Standard: Optional: 3-wire PT100 No output  Digital output signal  Supply voltage range +5 V DC ±1 V  Power consumption 300uA @ 5 V  Operating Specifications Operating temperature −40 to +85°C  Storage temperature −40 to +85°C  Mechanical Specifications  Housing material NORYL PPO UL94 VO  Dimensions L=33mm, Ø14mm  Weight 3g  Electrical connections 7 pins		
White housing: 0-1 V 0.2-1 V 0.2-1 V 0.2-1 V  Temperature output signal Standard: Optional: 3-wire PT100 No output  Digital output signal I²C interface	•	
Standard: 3-wire PT100 No output  Digital output signal  Supply voltage range  +5 V DC ±1 V  Power consumption  Operating Specifications  Operating temperature  -40 to +85°C  Storage temperature  -40 to +85°C  Mechanical Specifications  Housing material  NORYL PPO UL94 VO  Dimensions  L=33mm, Ø14mm  Weight  3g  Electrical connections  7 pins	White housing	•
Supply voltage range +5 V DC ±1 V  Power consumption 300uA @ 5 V  Operating Specifications  Operating temperature -40 to +85°C  Storage temperature -40 to +85°C  Mechanical Specifications  Housing material NORYL PPO UL94 VO  Dimensions L=33mm, ø14mm  Weight 3g  Electrical connections 7 pins	Standard	
Power consumption 300uA @ 5 V  Operating Specifications  Operating temperature -40 to +85°C  Storage temperature -40 to +85°C  Mechanical Specifications  Housing material NORYL PPO UL94 VO  Dimensions L=33mm, Ø14mm  Weight 3g  Electrical connections 7 pins	Digital output signal	I <sup>2</sup> C interface
Operating Specifications Operating temperature -40 to +85°C Storage temperature -40 to +85°C  Mechanical Specifications Housing material NORYL PPO UL94 VO Dimensions L=33mm, Ø14mm Weight 3g Electrical connections 7 pins	Supply voltage range	+5 V DC ±1 V
Operating temperature -40 to +85°C Storage temperature -40 to +85°C  Mechanical Specifications Housing material NORYL PPO UL94 V0 Dimensions L=33mm, ø14mm Weight 3g Electrical connections 7 pins	Power consumption	300uA @ 5 V
Storage temperature -40 to +85°C  Mechanical Specifications  Housing material NORYL PPO UL94 VO  Dimensions L=33mm, Ø14mm  Weight 3g  Electrical connections 7 pins	<b>Operating Specifications</b>	
Mechanical Specifications  Housing material NORYL PPO UL94 V0  Dimensions L=33mm, Ø14mm  Weight 3g  Electrical connections 7 pins	Operating temperature	-40 to +85°C
Housing material  NORYL PPO UL94 V0  Dimensions  L=33mm, Ø14mm  Weight  3g  Electrical connections  7 pins	Storage temperature	-40 to +85°C
DimensionsL=33mm, ø14mmWeight3gElectrical connections7 pins	<b>Mechanical Specifications</b>	
Weight 3g Electrical connections 7 pins	Housing material	NORYL PPO UL94 VO
Electrical connections 7 pins	Dimensions	L=33mm, ø14mm
	Weight	3g
*Alternative temperature technologies available — consult Michell	Electrical connections	7 pins

## **The Stable Sensor**

Process control customers need to have reliable and stable instrumentation giving repeatable data to the control system to minimize downtime, ensuring long-term process accuracy.

The I7000XP sensor stores its own unique calibration data within its integral electronics, ensuring 100% field interchangeability.

It uses the latest Michell advanced H8000 capacitive polymer element, developed over 40 years of specialization in challenging moisture measurements and now incorporated into this latest generation sensor.

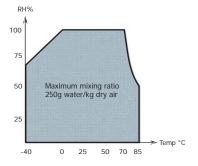
#### Measurement Performance

The new H8000 capacitive polymer element and high resolution electronic hybrid technology, within the HygroSmart I7000XP interchangeable sensor gives outstanding accuracy across the complete RH and temperature spectrum.

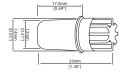
- Interchangeable sensor accuracy ±1% RH
- ±1% RH long-term stability per year
- I<sup>2</sup>C digital interface

## **Measurement Operating Envelope**

The new HygroSmart I7000XP operates to the defined technical specifications within the following operating condition envelope:



#### **Product Dimensions**



The orange HygroSmart symbol is used to identify any Michell RH product which has the latest generation HS3 interchangeable sensor



The blue HygroSmart symbol identifies products using the I7000XP generation interchangeable sensor

#### **Related Products from Michell Instruments**



Advanced interchangeable RH and Temperature Probe



DT282/292

Advanced 19mm Duct

Mount RH and Temperature

Transmitter



Advanced Remote Probe RH and Temperature Transmitter



DT284/294

Advanced 12mm Duct

Mount RH and Temperature

Transmitter



PF211
HVAC Relative Humidity
Probe

Michell Instruments 48 Lancaster Way Business Park, Ely, Cambridgeshire, CB6 3NW

Tel: +44 (0) 1353 658000, Fax: +44 (0) 1353 658199, Email: info@michell.com, Web: www.michell.com/uk

Michell Instruments adopts a continuous development programme which sometimes necessitates specification changes without notice. Issue no: I7000XP\_97474\_V2\_UK\_0216

