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IQ SENSOR NET Sensors: Encoded Data for Fieldbus Communication

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Note
For the most recent version of the manual, please visit www.ysi.com.

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Fieldbus data of IQ SENSOR NET sensors

The IQ SENSOR NET monitors the current state of each sensor operated on the system. The sensor status comprises sensor information (measured value status and status info of the sensor) and current processes (e.g. calibration or cleaning).

The sensor status is superior to the measured value status.
The influence of the sensor status on the measured value is documented with the status descriptions.

When the measured value is analyzed, e.g. by a superordinate control technology, the sensor status and measured value status must always be evaluated as well.
A measured value is valid if the following two conditions are met:

1. Sensor status MEASURE
2. Measured value status VALID

Sensor status

The sensor status is superior to the main and secondary measured value of a sensor.

Code	Status	Meaning of the status
00h	UNUSED_ID	Sensor and sensor number are not available in the IQ SENSOR NET system. The measured value status of the main and secondary measured value is **MISSING** (4h) (see section MEASURED VALUE STATUS). The status UNUSED_ID is also transmitted if the fieldbus connector (MIQ/(A-)PR or MIQ/(A-)MOD) fails to receive data from the IQ SENSOR NET Controller over a period of more than two minutes. Possible reason: Interfered communication or controller failure. Within the two minutes delay the transmitted last data remain frozen.
01h	INACTIVE	The sensor is currently inactive. The sensor number (ID) and respective setting dataset are available in the IQ SENSOR NET system. The sensor was removed from the IQ SENSOR NET system or the communication does not work. The measured value status of the main and secondary measured values is **MISSING** (4h) (see section MEASURED VALUE STATUS). The measured value display on the terminal indicates *Init* or *Error*.
02h	MEASURE	The sensor is in measuring mode. The measured value status is VALID, OFL or INVALID. The measured value display on the terminal indicates the valid measured value, *OFL* or "----" (invalid measured value). When the measured value is analyzed, e.g. by a superordinate control technology, the sensor status and measured value status must always be evaluated as well (see also section MEASURED VALUE STATUS).
03h	CALIBRATE	The sensor is being calibrated. No measured value is available. The measured value status of the main and secondary measured values is **MISSING** (4h) (see section MEASURED VALUE STATUS). The measured value display on the terminal indicates *Cal*.
04h	ERROR	The sensor is in severe fault mode.

Code	Status	Meaning of the status
05h	MAINTENANCE	The sensor is in maintenance condition or a cleaning cycle is active (cleaning including adjustment phase). The measured value display on the terminal indicates a flashing measured value or *Clean*. During the sensor status MAINTENANCE, the measured value and the measured value status is frozen. In the case of the measured value status VALID, the measured value is frozen on the value of the start of the MAINTENANCE status.

Measured value status

The measured value status is available for the main and secondary measured value of a sensor.

Code	Status	Meaning of the status
1h	VALID	The measured value is valid. In the case of the sensor status MAINTENANCE, the measured value is frozen on the value of the start of the MAINTENANCE status. The measured value display on the terminal indicates a flashing measured value or *Clean*.
2h	OFL	The measured value lies outside the selected measuring range. The transmitted measured value is set to 0. The measured value display on the terminal indicates *OFL*.
3h	INVALID	The measured value is invalid. The transmitted measured value is set to 0. The measured value display on the terminal indicates "----" (invalid measured value).
4h	MISSING	The measured value cannot be determined or is not available. The transmitted measured value is set to 0. The measured value display on the terminal indicates *Cal* or *Error*.

Sensor model

The sensor model is the model name the sensor registers with on the IQ SENSOR NET.

Code	Modell
0101h	SensoLyt700IQ
0201h	TetraCon700IQ
0301h	TriOxmatic700IQ
0302h	TriOxmatic701IQ
0303h	TriOxmatic702IQ
0304h	SC FDO 700 (FDO700IQ)
0305h	SC FDO 701 (FDO700IQ)
0401h	VisoTurb700IQ
0402h	ViSolid700IQ
0501h	AmmoLyt700IQ
0503h	AmmoLyt+ (AmmoLyt+700IQ)
0907h	AmmoLyt+K (AmmoLyt+700IQ)
0601h	NitraLyt700IQ
0602h	NitraLyt+ (NitraLyt+700IQ)
0801h	MIQ/IC2, current input 1
0802h	MIQ/IC2, current input 2
0901h	VARiON A (VARiON700IQ)
0902h	VARiON N (VARiON700IQ)
0905h	VARiON A (VARiON+700IQ)
0906h	VARiON N (VARiON+700IQ)
0907h	VARiON K (VARiON+700IQ)
0A01h	NitraVis701IQ
0A02h	NitraVis705IQ
0A03h	CarboVis701IQ
0A04h	CarboVis705IQ
0A05h	NitraVis705IQ (NiCaVis705IQ)
0A06h	CarboVis705IQ (NiCaVis705IQ)
0A07h	SolidVis701IQ (UV/VIS Sensors with TSS-Option)
0A08h	SolidVis705IQ (UV/VIS Sensors with TSS-Option)

Status info of sensors

Model	Bit 0	Bit 1	Bit 2	Bit 3-31
SensoLyt700IQ	*Component hardware defective*	*SensCheck: pH electrode defective, glass broken*	-	-
TetraCon700IQ		-	-	-
TriOxmatic700IQ		*SensReg: Electrolyte supply is depleted*	*SensLeck: Membrane head damaged **	-
TriOxmatic701IQ				-
TriOxmatic702IQ			-	-
SC FDO 700		*Measurement interfered*	-	-
SC FDO 701		*Measurement interfered*	-	-
VisoTurb700IQ		*SensCheck: Sensor contaminated*	*SensCheck: Ultrasound cleaning system has failed*	-
ViSolid700IQ				-
AmmoLyt700IQ		-	-	-
AmmoLyt+		-	-	-
AmmoLyt+K		-	-	-
NitraLyt700IQ		-	-	-
NitraLyt+		-	-	-
NitraVis70xIQ		*Component hardware defective* xxx	*Optical measuring range exceeded #-10*	-
CarboVis70xIQ				-
SolidVis70xIQ				-
MIQ/IC2		-	-	-
VARiON A		-	-	-
VARiON N		-	-	-
VARiON K		-	-	-

* The SensLeck function is not available with the sea water model (-SW variant)

Note
The status info must be evaluated for each bit individually.

Measuring mode

	Code							
Model	**00h**	**01h**	**02h**	**03h**	**04h**	**05h**	**06h**	**07h**
SensoLyt700IQ	pH	mV						
TetraCon700IQ	S/cm	*SAL*	TDS	S/m				
TriOxmatic700IQ TriOxmatic701IQ TriOxmatic702IQ	mg/l O2	% O2						
SC FDO 700 SC FDO 701	mg/l O2	% O2						
VisoTurb700IQ	FNU *Turb*	NTU *Turb*	TEF *Turb*	mg/l SiO2	ppm SiO2	g/l TS		
ViSolid700IQ	g/l TSS (M1[1])	% TSS (M1[1])	g/l TSS (M2[1])	% TSS (M2[1])	g/l SiO2 (M1[1])	% SiO2 (M1[1])	g/l SiO2 (M2[1])	% SiO2 (M2[1])
AmmoLyt700IQ AmmoLyt+	mg/l NH4-N	mg/l NH4	mV					
AmmoLyt+K	mg/l K	mV						
NitraLyt700IQ NitraLyt+	mg/l NO3-N	mg/l NO3	mV					
NitraVis70xIQ	mg/l NO3-N	mg/l NO3						
CarboVis70xIQ	mg/l *CODto*	mg/l *CODds*	mg/l *TOC*	mg/l *BOD*	mg/l *DOC*	*Abs/m* *SACto*	*Abs/m* *SACds*	
SolidVis70xIQ	(m)g/l TSS [2]							
MIQ/IC2	[3]							
VARiON A	mg/l NH4-N	mg/l NH4	mV					
VARiON N	mg/l NO3-N	mg/l NO3	mV					
VARiON K	mg/l K	mV						

[1] M1 = matrix type 1, M2 = matrix type 2
Matrix types: see ViSolid 700 IQ sensor operating manual

[2] The measurement unit depends on the settings of the main sensor

[3] The measured parameter and measurement unit depend on the settings of the display values (see MIQ/IC2 sensor operating manual).

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