



المركز الوطني للبحوث الزراعية
National Agricultural Research Center

(يعبا من المدير المالي)

اسم المشروع: PROSIM

المادة:

قيمة المشتريات الفعلية:

الرقم المتسلسل لطلب الشراء: ٣٥٦
اسم المديرية: بحوث المياه والتربة
مخصصات المشروع حسب الموازنة:

المصروف:

الرصيد:

الرقم	قائمة اللوازم	المطلوب	
		الوحدة	الكمية
1.	نظام خلط مياه اتوماتيكي	وحدة	2
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
المجموع			

اسم و توقيع الطالب:
اسم و توقيع مدير المديرية:
مشروعات امين العهدة:
مشروعات محاسب الالتزام للمشاريع:
مشروعات المدير المالي:
راي مدير وحدة المتابعة و التقييم في توفر المخصصات و مطابقة
الطلب مع وثيقة المشروع:
راي المساعد لشؤون البحث:

موافقة المدير العام:
ملاحظات: 1. يستخدم اكثر من نموذج. 2. ترفق مواصفات واضحة و مفصلة

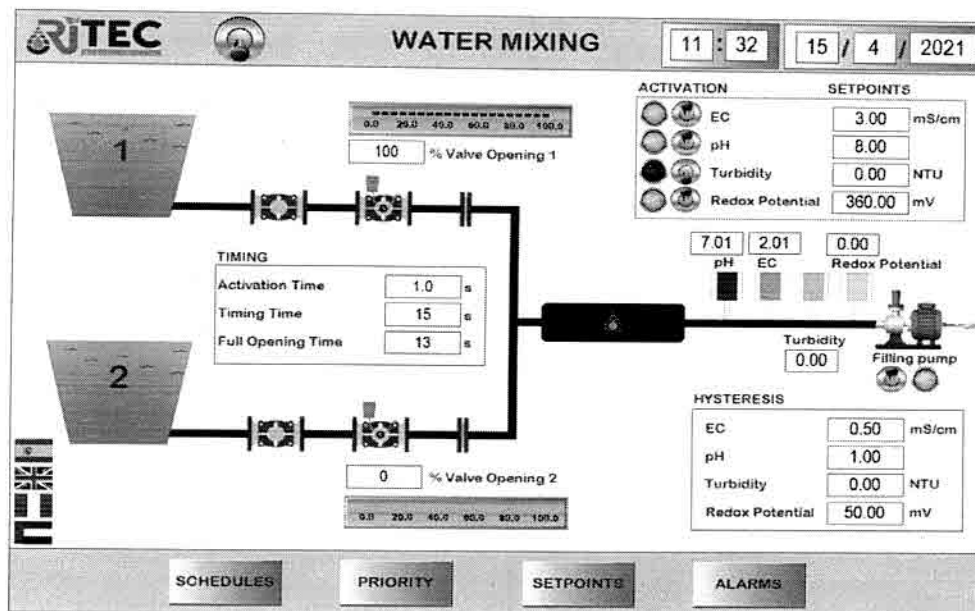
المركز الوطني للبحوث الزراعية
مدير مديرية اللوازم والعطاءات
السيد سامي الطويقات

22/9/2022

Advanced Decision Support System (DSS)

In order to support water quality analysis and control the reuse of TWW, an innovative remote-control system will be required. The system, to be used for the safe and sustainable mixing of different water quality resources for irrigation, is based on a reliable hardware infrastructure (redundant server, storage, VPN gateway), at a real Data Center, as well as on the implementation of several SCADA responding to the paradigm of Cloud Computing. In the field, measurements acquired by the control units together with the appropriate sensors sent over the Modbus at the PLC (Programmable Logic Controller) that together with an I/O process of treatment plants, transmit data to the control center. At the control center, the real-time information is shown in a video graphics page, while historical data are processed for providing statistical reporting.

The system uses innovative software developed to evaluate an appropriated mix of irrigation water quality according to crop-soil-climatic conditions of each farm besides the monitoring system. Each farmer has a personal sheet in the web-page where, with the help of continuous monitoring system, and can receive exactly the irrigation water quantity and quality directly in his field.



Technical specifications

PLC Schneider TM241CE24R:

PLCs from the Modicon M241 range, logic controllers for demanding performance applications. This logic controller provides 14 discrete, 8 fast inputs, 6 relays, 4 transistors, 4 fast transistor outputs, Ethernet relay output. It has a nominal supply voltage of 100 V to 240 V AC, an output voltage of 5 V to 125 V DC or 5 V to 250 V AC for relay, 24 V DC for transistor, and an output current of 2 A for relay, 0.1 A for fast output, 0.5 A for transistor. This product allows you to create applications intuitively, thanks to an organized screen layout. The integrated connections are USB port with USB 2.0 mini B connector,

المركز الوطني للبحوث الزراعية
مدير مديرية اللوازم والمعدات
السيد سامي الطويقات

non-isolated serial link 1 with RJ45 connector and RS232/RS485 interface and non-isolated serial link 2 with removable screw terminal block connector and RS485 interface. It is a Modicon M241 controller with 8 MB for program, 64 MB for system RAM, 128 MB of on-board flash memory for user program backup, and 16 GB SD card memory capacity. It is an IP20 rated product. Its dimensions are 150mm (Width) x 95mm (Depth) x 90mm (Height). It weighs 0.53kg. Modicon M241 logic controllers are designed for high performance compact machines incorporating speed and position control functions. This product is certified by CE, IACS E10, RCM, CSA, CULus. Meets ANSI/ISA 12-12-01, CSA C22.2 No 142, CSA C22.2 No 213, EN/IEC 61131-2:2007, Marine Spec (LR, ABS, DNV, GL), UL 1604 and UL 508 . Supports DIN rail mounting. Intuitive machine programming with Eco-Struxure Machine Expert, ready-to-use applications and function blocks.

HDMI screen:

To have access to the data, as well as to be able to modify the configuration of the equipment remotely, an HMI screen is selected due to the features it offers and its low Price. The Weintek MT807oiE model was chosen. Its technical specifications are the following:

Pantalla	Pantalla	7" TFT
	Resolución (WxH dots)	800 x 480
	Brillo (cd/m ²)	350
	Contraste	>100:1
	Tipo retroiluminación	LED
	Vida retro iluminación	30.000 hrs
Panel Táctil	Colores	16 M
	Tipo	Tipo resistivo 4 hilos
Memoria	Precisión	Área activa largo (X)±2%, Ancho (Y)±2%
	Almacenamiento(MB)	128
Procesador	RAM (Mib)	128
		CPU Cortex A8 32Bit RISC 600Mhz
Puertos I/O	USB Host	USB 2.0 x 1
	Ethernet	1 puerto RJ45 (10/100 Base-T)
	Puertos COM	Com1: RS-232/RS-485 2W/4h Com2: RS-485 4h
RTC		Incorporado
Alimentación	Entrada alimentación	24±20%Vdc
	Consumo	350mA a 24VDC
	Resistencia Tensión	500VA/ 1 min
	Resistencia Ahlamiento	Excede 50MQ a 300VDC
Especificaciones	Resistencia a la Vibración	10 a 25Hz (dirección X,Y,Z, 2 G 30 minutos)
	Caja	Plástico
	Dimensiones WxHxD	200.3 x 146.3 x 34mm
	Huella (mm)	152 x 138
	Peso (kg)	Aprox.0.6 kg
	Estructura de protección	NEMA4 / IP65
Entorno	Temp. almacenamiento	-20°~60°C (-4° ~ 140°F)
	Temperatura trabajo	0° ~ 50°C (32° ~ 122°F)
	Humedad relativa	10% ~ 90% a 40°C (sin condensación)
Certificados		EN 55022:2010 Clase B
		EN 55024:2010
		EN 61000-3-2:2006/A2:2009
		EN 61000-3-3: 2008
Software		AS/NZS CISPR 22:2005+A1:2010
		EcoBuilder Pro V3.00.01 e versiones posteriores

Sensors:

JUMO ecoLine NTU (Optical Sensor for Turbidity Measurement):

Turbidity measurement according to DIN EN ISO 7027 is an effective method for monitoring water with low or high turbidity. The measuring principle of the JUMO ecoLine NTU turbidity sensor is based on the measurement of infrared radiation by the 90° light scattering method. Due to the measuring light of a

المركز الوطني للبحوث الزراعية
مدير مديرية اللوازم والعطاءات
السيد سامي الطويقات

wavelength of 880 nm and the wide measuring range of 0 to 4000 NTU, this sensor can be used for various applications in water and wastewater, such as for quality monitoring. of water, for the detection of leaks in filters and for the final control of wastewater.

The JUMO ecoLine NTU stores calibration data and history directly in the sensor electronics, so the sensor does not require constant recalibration and is quickly ready for use anywhere.

The sensor is characterized by being elegant and having a robust construction.

Redox sensor:

JUMO tecLine HD pH/Rd

Redox measuring electrodes, digital with reusable JUMO digiLine electronics or analog

Series 201026 — Redox electrodes

JUMO tecLine HD Solo electrodes are particularly suitable for process measurement and industry in general due to the use of high-performance materials and components. They are designed as combination electrodes (glass or metal electrode and a reference electrode on a rod). Optionally -depending on the model- a Pt1000 temperature probe can be additionally integrated

An optimized PTFE ring diaphragm ensures fast response insensitive to larger contaminant loads or process or waste water containing oil and grease. Alternatively, a variant with orifice diaphragm is available as an optimal solution for processes with high solid content (eg wastewater with sand particles or media subject to crystallization or precipitation reactions). JUMO tecLine HD electrodes represent the state of the art in modern pH and ORP electrodes. Each electrode is a quality product with individual verification and calibration certificate. In modern manufacturing facilities they guarantee consistent characteristic values.

Standard electrodes are made from FDA-listed, physiologically safe materials. They are equipped with lead-free protective glass and are therefore RoHS 2 compliant.

pH sensor:

The electrodes of the JUMO ecoLine series are high-quality measurement sensors with a good performance ratio.

Active pH component: JUMO ecoLine and JUMO BlackLine electrodes are equipped with low-resistance JUMO UW glass to guarantees fast and safe measurement results.

المركز الوطني للبحوث الزراعية
مدير مديرية اللوازم والمعدات
السيد سامي الطويقات

Active Redox Component – A durable platinum tip provides safe measurements and makes the sensor easy to clean.

Reference system: JUMO acrylamide-free gel is used in the glass and PEI plastic shaft versions. This highly viscous KCl solution is ideal for measurement in aqueous media in general. The electrolyte can be equipped with an optional "salt reserve" to increase lifetime when measurements are performed in media with fewer ions or at high flow rates. In the JUMO BlackLine version, a polymerized solid KCl electrolyte is used. The JUMO cartridge-type guide system has proven itself over the years and is the reference system used here. This keeps the electrolyte free of silver ions throughout the life of the sensor, making it less susceptible to electrode poisons.

In the "glass shaft" version (1), the JUMO ecoLine electrodes have a ceramic diaphragm. A fiberglass diaphragm is provided for the plastic shaft version made of clear PEI (2). A snap-on protection basket protects the sensor when used with portable meters. The JUMO BlackLine (3) has a high-quality ceramic diaphragm. The shaft is made of black PPO and has an integrated protection basket.

An option is available for the electrodes to be delivered in a storage container (holder). This is recommended if the sensors are only used sporadically, to refresh after long periods of heavy use, or if they are stored for long periods of time.

Characteristics:

Magnitudes de medida	Valor pH o potencial Redox Temperatura (opcional)
Rangos de medición	
pH	0 a 14 pH
Potencial Redox	±1500 mV
Temperatura	0 a max. 125 °C en ejecución con diafragma PTFE 0 a max. 110 °C en ejecución con diafragma de orificio

Influencias del medio ambiente

Temperatura de almacenamiento	-5 a +30 °C
Tipo de protección	IP 66 y IP 67

Condiciones de proceso

	Ejecuciones con diafragma PTFE ^a	Ejecuciones con diafragma de orificio
Temperatura de proceso	0 a +135 °C	0 a +110 °C
Presión de proceso	13 bar	
Diagrama de temperatura de presión		
conductividad mínima recomendada	50 µS/cm	500 µS/cm

^a Diagramas presión/temperatura para el electrodo en combinación con los portaelectrodos ← página 9.

Construcción

Conexión a proceso	Pg13,5
Sensor de temperatura	Pt1000 (Clase A)
Cabezas insertables	Cabeza rosca N (S8), rosca Pg13,5 Cabeza insertable VarioPit (VP), rosca Pg13,5
Sistema de referencia	Con presión compensada sistema de doble cámara, un sistema conductor tipo cartucho contiene la plata-cloruro de plata (Ag/AgCl).
Diafragma	exterior: Diafragma anillo PTFE o de orificio interior: Diafragma de cerámica*
Membrana de vidrio	esférico
Vidrio de membrana	Vidrio de alta temperatura (HT), gran resistencia a los álcalis
Material	consultar planos en capítulo "Dimensiones", página 4

* en cámara doble

المركز الوطني للبحوث الزراعية
مدير مديرية اللوازم والعطاءات
السيد سامي الطويقات

EC sensor:

Measure up to 10 mS/cm.

Other materials:

3 tanks 5,000L, with 2 complete suctions with motorized and manual valves, and other connection accessories. A Mixer, and a 1.5 Cv electric pump, with its electric maneuver and level control.

المركز الوطني للبحوث الزراعية
مدير مديرية اللوازم والمعدات
السيد سامي الطويقات