

# FLS-ST-AU46 Overhead Influx Unit





Creative Distribution Actumation Co.,Ltd.

# Wisdom Creats Value



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Creative Distribution Automation Co., Ltd. (CREAT) was founded in 1988 as a spinoff of China Electric Power Research Institute (CEPRI), specializing in the research & development and manufacture of distribution equipment, power property services, distributed photovoltaic, energy utilization and electricity allocation & sales business.

It is headquartered in the core zone of Zhongguancun Science Park in Beijing, with more than 30 subsidiaries spread all over China. It is one of the nation's most important high-tech enterprises (Torch Plan of the Ministry of Science and Technology of China) and ranked in top 100 enterprises in Zhongguancun Science Park.

CREAT made Initial Public Offerings in 2010 in Shenzhen middle and small capital stocks market. Its stock code is 002350.

#### Main products range:

- Fault Indicator/FLS/DTU/FTU
- Automatic Circuit Recloser
- Transformer(oil-immersed, amorphous alloy, dry-type)
- Ring Main Unit/Pad-Mounted Switchgear
- Compact Substation/Pad-mounted Transformer
- Modular Substation
- Cable Accessories
- Power Electronics(SVC,SVG etc.)

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Thank you for choosing our products!

Due to the version upgrade of the product or other reasons, the manual contents might change. This manual is only used as a guide. All the statements, information and suggestions in this manual do not constitute any expressed or implied guarantee. In order to make it convenient for you to record product usage and suggestions at any time, so that we can truly understand the operation of our products and seek continuous improvement to better serve you, we have prepared installation instruction for you, and hope you can record the usage, and your feedback is warmly welcomed.

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#### **1** Product Description \_

FLS-ST-AU series overhead terminal (hereinafter referred to as the "Influx Unit") is used with our company's fault indicator (Collection Unit). It's mainly used for the fault detection of the distribution network line, and cooperates with the background fault locating system to realize the quick positioning and troubleshooting of the faulted line.



Figure 1 Influx Unit Appearance

# 2 Components Description \_\_\_\_\_

Components	Description
Solar panel	Main energy unit
Shell	N/A
Battery	Energy storage unit
Mainboard	Logical computing unit

#### **3** Installation Instructions

- 3.1 Installation of Influx Unit
- 3.1.1. Handling tool



Figure 2 Wrench and Cross Screwdriver

# 3.1.2. Installation process and method

(1) Install the solar panel bracket on the Influx Unit with a cross screwdriver, so that the solar panel is in an unfolded state, as shown in following figure.



Figure 3 Unfolding Solar Panel on the Influx Unit

(2) Remove the four nuts on the hoop of the Influx Unit with the wrench. When the height of the Influx Unit on the pole meets the requirements, use a hoop to pass through the installation hole of the Influx Unit. Install a nut at each end of the hoop (not tightened temporarily). After adjusting the direction of the solar panel, tighten the nut and install a nut at each end to ensure a firm installation.



Figure 4 Influx Unit Hoop and Grounding Nut

(3) Put the grounding cable nose on the grounding nut of the Influx Unit, and tighten the grounding nut with the wrench to ensure the reliable grounding of the Influx Unit. The Influx Unit after installation is as shown in the figure below:



Figure 5 Influx Unit after Installation

3.2 Commissioning before the Installation of the Influx Unit

#### 3.2.1. Definition of the Influx Unit Interface

The solar panel interface, super capacitor interface, lithium battery interface, local debugging serial port, and 4G module interface of the Influx Unit are shown in the following figure:



Figure 6 Main Interface of Influx Unit

No.	Name of the Interface	Names and	Names and Definitions from Left to Right			
1	Solar panel interface	Do not use	Sun-: solar negative	Sun+: solar positive	1	
0	Lithium battery interface	Do not use	Do not use	B-: Battery negative	B+: Battery positive	
3	4G module interface	Rx: 4G receiving	TX: 4G sending	GND: 4G negative	VG: 4G positive	

The definition of each interface is as below:

Note: The local debugging serial port is a standard DB9 interface, so the definition is not listed. The receiving and sending of the 4G module interface definition refers to the mainboard of the Influx Unit.

#### 3.2.2. Parameter Setting of the Local Serial Port

The necessary condition for the general maintenance software to read the relevant parameters of the Influx Unit is that the communication properties are correct. The correct setting method is as below:

(1) Plug the USB serial cable into the computer (make sure the driver is installed correctly). Right-click "AU", and select "Comm Property". In the pop-up interface, check the relevant parameters, as shown in the figure below:

Dialog			22 §
Property	Value	Property	Value
Protocol type	FiProt	Port type	Serial port
Balance mode	√	<ul> <li>Serial port para</li> </ul>	ameters
Public address	1	Serial numb	oer COM2
<ul> <li>Byte parameter</li> </ul>		Baud rate	115200
Link address byte	1	Parity bit	N
Number of transmi	1	Data bits	8
Number of bytes o	2	Stop bit	1

Figure 6 Serial Communication Settings

(2) Save the settings of the relevant parameters (the serial port number is subject to the actual number), then right-click "AU", and select "Open Comm". At this time, it could be seen that the red exclamation mark, which was in the lower right of the terminal icon in the maintenance software, disappeared, as following:

AU	Equipment

Figure 7 Illustration of the Serial Connection Close and Open

(3) Left-click the triangle on the left side of the terminal icon to expand the relevant menu, and click "Read" under the page of "Running parameter". The running parameters of the Influx Unit could be correctly read, as shown in the following figure:

System	Communication	С	onfig Op	peratio	n A	bout			
	2								
Connect	Disconnect								
Equipment		- ልህ							_
4 👫 AU			Running par	ramete	ameters Telephone number		Version		
14	Masterian		roup nam		Par	ameter nam	ne	Parameter va	lue
<b>*</b>	Monitoring	9		FI typ	e				
₩.	Operating	14		Telen	netry u	ipload			s
4	Point-table	23		Link a	ddres	s			
12	All parame								
320 (2)	No parament								
<b>₽</b>	GPRS para								
		1							
			Read	Wr:	te	] Timing re	ad Off ti	iming read	
Communi	ication state		[AV]Messag	;e					

Figure 8 Illustration of Reading the "Running Parameter" of the Terminal Parameters

#### 3.2.3. Time Calibration of Influx Unit

Since the time of the Collection Unit depends on the Influx Unit, as well as the record of the fault time, the time of the Influx Unit needs to be confirmed before the formal installation. The time calibration operation is shown in the following figure:

Equipment	AU
4 🞘 AU	Time calibration
😹 Monitoring	-Calibration time-
A Operating	Send system time RTU time 2013-3-3 03:02:01
AU parame	he specified 2019 年 6 月 13 日 15 时 20 分 50 秒
	Read time Read 2013-3-3 03:02:01

# 4 Product Parameters

# 4.1 Operating environment

Working altitude	Below 2000 meters
Ambient	-40℃~+70℃
temperature	
Working	≤95% (Relative humidity)
environment	
humidity	
Installation	Pole installation
method	
Protection Level	IP55

# 4.2 Main Functions

Data Management	Remote signal collection and upload, telemetry collection and upload, SOE event recording, load recording, parameter setting, status reading and data encryption functions and etc.				
Communication Management	Receive information such as the "Collection Unit action information", "load current information" and etc. Forward the fault action and load change information to the master station system through mobile wireless communication.				
Communication Method	The communication with the Collection Unit adopts short-range wireless communication; the communication with the master station adopts mobile wireless communication.				
Communication Protocol	IEC870-5-101 protocol				
Power Supply	The solar panel is used as the main power source, and the storage battery is used as the backup power source. The main power supply and backup power supply are automatically switched.				
Status Report	Regularly send status report to the master station to report status information such as equipment operating status and battery voltage. Receive and respond to the call commands from the master station.				
Status Monitoring	Battery voltage monitoring, communication status monitoring, data storage monitoring				
Local Maintenance	RS232 local debug serial port				
Program Upgrade	Local serial port upgrade and 101 protocol remote upgrade				
Time Synchronization	Network time synchronization				
Operating Mode	Real-time mode, solar real-time mode, quasi real-time mode				

## 4.3 Technical Parameters

Operating	10~25V
Voltage	
Static Power	≤0.3VA
Solar Power	15W/20W/30W optional
Backup Battery	7AH/12AH/24AH optional
Capacity	
Backup battery	Not less than 20 days (12AH battery)
standby	
Data Storage	1024 event records, 31 days load record
Recording file	Comtrade (1999)
format	
Punctuality	≤5ms (Turn on GPS/Beidou Time Synchronization)
Cabinet Material	304 stainless steel, industrial gray RAL7035
Color	
Dimensions	See Figure 9 for details
Weight	Not more than 17.5kg

# Figure 9 Influx Unit Dimensions with 7AH Battery

# 4.4 Main Parameters of the Terminal



Parameters	Description
Indicator Type	The Influx Unit is compatible with a variety of Collection Units, the main options are cable indicators: overhead indicators and outlet
indicator Type	indicaotrs.
Telemetry	The period for the Influx Unit to periodically report the telemetry to
Upload Cycle	the master station is in seconds.
Sub-transmitter	Link address for 101 communication between Influx Unit and the
Address	master station

#### **5** Troubleshooting

The Time Calibration of the Influx Unit does not work with the interface software
 -Check whether the serial port line is normal

--The operations such as the time calibration of the Influx Unit must follow the relevant regulations of the 101 protocol. Therefore, in addition to the communication property, the correct sub-transmitter address is also required as a necessary condition. The correct setting method is as following:

Read the running parameters in the running parameter interface of the terminal parameters, and check the sub-transmitter address (the actual sub-transmitter address is subject to the sub-transmitter address which needs to be configured on-site), as shown in following figure:

System		Communication	n C	onfig Op	peration	About	_	
8		-						
: Conne	ct	Disconnect						
Equipmer	nt		- AU					
4 👫 Δ11		Running pa		rameters Tel		elephone number	Version	
	le Martinia			roup nam	Parameter name		er name	Parameter value
4		wonitoring	9		FI type <u>Telemetry upl</u> oad			FI-for RUS
4	4	Operating	14					600
4	ź.	Point-table	23		Link addı	ess		1
🕌 AU parame								
4	ł,	GPRS para						

#### Figure 10 Sub-transmitter address of the Influx Unit

Back to the setting interface of "Comm Property", and check whether the public address is consistent with the read-out sub-transmitter address. If not, the public address should be modified to be consistent with the sub-transmitter address (before modification, it needs to disconnect, then open it):

🛃 Dialog	-		8	X
Property	Value	Property	Value	
Protocol type	FiProt	Port type	Serial port	
Balance mode	Balance mode √		<ul> <li>Serial port parameters</li> </ul>	
Public address	1	Serial numb	er COM2	
<ul> <li>Byte parameter</li> </ul>		Baud rate	9600	
Link address byte	e 2	Parity bit	N	

#### Figure 15 Public Address of Communication Property

2、 The Report of the Indicator Channel Fault

The indicator channel fault means that there's no communication with the Influx Unit

of a certain channel within the specified time. The possible reasons are as following:

- --The communication connection between the Collection Unit and terminal failed;
- --Long time power off of the line with which the Collection Unit connects