

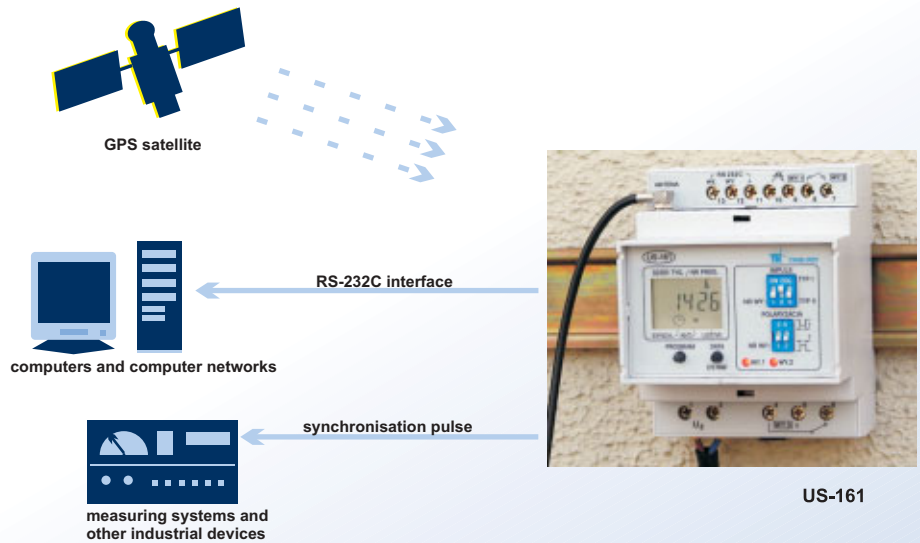
TIME SYNCHRONIZER FOR MEASURING SYSTEMS, COMPUTERS AND INDUSTRIAL EQUIPMENT TYPE US-161

- Three types of impulse outputs
- Serial interface RS232C
- Synchronization with GPS atomic time standard
- Simple usage
- Modular housing for DIN bus mounting
- Compact size
- Parameters accommodated to the individual orders

Application

Time synchronizer type US-161 is a modern, simple in usage and reliable device which enables:

- Time synchronizing in measuring systems
- Time synchronizing in computer networks or singular PC's
- Time synchronizing in industrial equipment
- Resetting the maximum power counter



The synchronizer is equipped with antenna (receiver) of satellite signal GPS, LCD display and two pushbuttons located on the front panel. These pushbuttons enable programming the optional time zone in the 24-hour range, with resolution of 1 minute, in relation to GMT time (in Poland + 1 hour), and choosing one of nine pre-programmed modes of switching to summer/winter time in accordance with the table below (in Poland mode A02).

Software number	Standard	Switch to winter/summer time		Switch to summer/winter time	
		Day and month	Hour	Day and month	Hour
A00		Without switch to summer/winter time			
A01	CET	Last Sunday of March	02 03	Last Sunday of September	03 02
A02	CET	Last Sunday of March	02 03	Last Sunday of October	03 02
A03	GMT	Last Sunday of March	01 02	Last Sunday of September	02 01
A04	GMT	Last Sunday of March	01 02	Fourth Sunday of October	02 01
A05	EEZ	Last Sunday of March	03 04	Last Sunday of October	04 03
A06	EEZ	Last Sunday of March	03 04	Fourth Sunday of October	04 03
A07	PST	Third Sunday of March	03 02	First Sunday of October	02 03
r		Programmed by user			

The reception of GPS signal enables the synchronizing of internal timer with the atomic time standard. The synchronizer has got three types of impulse outputs : relay output, transistor output (of OC type) and current output; the current output can be replaced by additional relay output. All types of outputs are provided with galvanic separation. For each of impulse outputs it is possible (with switches of DIP-Switch type) to select one of the two impulses (TYP I or TYP II) generated by a processor and to change their polarization. Standard types of impulses are shown the table below.

The US-161 synchronizer is also equipped with the serial interface RS-232C. It enables to transfer the date and time to external devices , mainly in order to synchronize the time in computer networks or in singular computers.

The operation manual contains the description of transmission protocol enabling the user to use the interface in his own applications. At the orderer request the software working in DOS or Windows 3.x/9x/NT/2000/XP environments can be delivered.

Remark

At the orderer request it is possible to change the length of generated impulses in the range from 30 to 9999 ms., define other types of generated impulses, e.g. impulse TYP I : hour 00:00, impulse TYP II :every hour, change the transmission protocol of RS-232C interface.

Version	Impulse – TYPI	Impulse - TYP II
P	50 ms every quarter hour	50 ms once per 24 hours at 12:00
P1	1,5 s every quarter hour	1,5 s once per 24 hours at 12:00
P8	80 mss every quarter hour	80 ms once per 24 hours at 12:00
N	50 ms every quarter hour	50 ms once per 24 hours at 00:00
H1	1 s every one hour	50 ms once per 24 hours at 12:00
K1	33 m s every quarter hour	1,5 s once per 24 hours at 12:00
S3	2048 ms every quarter hour	50 ms every quarter hour
S4	80 ms every one second	1,5 s once per 24 hours at 12:00
S42	80 ms every one second	1,5 s at 02:00
S5	1 s every one hour	50 ms every one hour
S6	33 ms at 12:00	1 s at 12:00
S61	50 ms at 12:00	1,5 s at 12:00

Technical data (synchronizer):

Power supply voltage	110 VAC or 230 VAC ; -15% +10% (depending on version)
Power requirement	3,5 W
Display	LCD type
Time zone programming	Yes
Programming of switching to summer/winter time	Yes
Accuracy in the whole temperature range:	
- in autonomous working mode	+/- 1,5 x 10 ⁻⁵ (appr. +/- 1,3s/24 hours)
- when working with GPS antenna	the same as the accuracy of atomic standard
Load capacity of outputs:	
- relay output (relay of RM96 type)	8A, 250 VAC (resistance type load)
- transistor output (OC type)	50mA, 24 VDC
Current source output	(0-10) mA or (0-20 mA or (0-30)mA, 24VDC
Load capacity of additional contact in REL version	8A, 250 VAC (resistive load)
Time and frequency of synchronizing impulses	See the table at the first page
Measurements	90 x 71 x 73 mm
Mass	Max. 400 g
Protection degree of housing	IP20
Ambient conditions:	
- temperature range	From -20°C to +55°C
- pressure range	86 – 106 kPa
- humidity	Max. 90% (without condensation)
- allowed rate of ambient temperature change	5°C/hour
- insolation	No direct exposure to insolation
- ventilation	Natural
Indicator of receiving GPS signal	Dot on the LCD display pulsing with the signal
Indicator or reaching synchronization (SYNCH)	Clock symbol on LCD display
Period of displaying synchronization indicator	12 hours from the last synchronization
Indicator of outputs polarization	For transistor and current output.

Technical data (antenna):

Mass	40 g
Measurements	38 x 43 x 13 mm
Protection degree	IP 65
Standard cable length	5 m*
Supply	3 VDC, 16 mA
Working frequency	1575,42 MHz
Ambient temperature range	From -40 C to +100°C

*) Cable can be extended max. to 20 m with the conductor of attenuation max. 1,5 dB/m at working frequency.

Remark

Synchronizing impulses will appear as the standard at impulse outputs providing that the synchronization indicator is displayed on LCD display, but the impulse appearing every 1 second is generated independently to the synchronization with accuracy equal to the accuracy of internal time standard.

Example of type description in the order: US-161/GPS/XX/WW/N

XX current of the current output: 10, 20, 30 mA or REL word meaning that instead of current output there is to be installed relay contact.
 WW version (see the table at first page)**
 N supply voltage : 110 VAC or 230 VAC

Remark

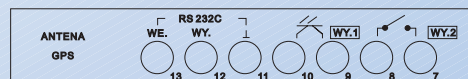
Together with the synchronizer can be ordered additionally RS232 cable of 15 m length for synchronization of PC computer deck clock working in DOS or Windows 3.x/9x/NT/2000/XP environments.
 Example : US 161/GPS/20/P/230 + RS232 cable

**) Other values after agreeing it with the manufacturer.

The manufacturer reserves the right to introduce changes in the construction of the product being the subject of this catalogue card.



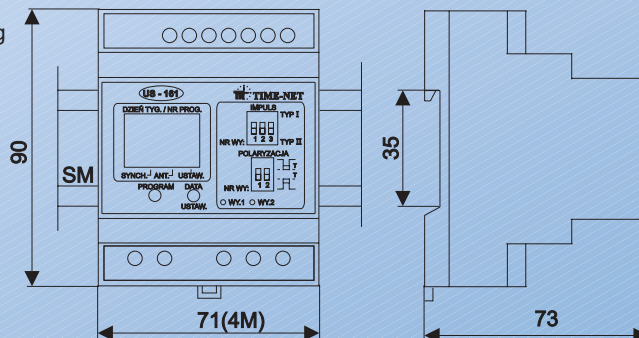
Upper terminal block in version with current source



Upper terminal block in REL version with additional relay



Lower terminal block



Measurements of synchronizer