

# Programowe użycie daty i czasu w sterownikach Astraada One

Informator techniczny

#### WSTĘP

Informator dotyczy wykorzystania w aplikacji daty i czasu pobranego bezpośrednio ze sterownika Astraada One.

Dodatkowo w informatorze opisana jest procedura załączenia serwera NTP (Network Time Protocol).

#### **DATA I CZAS**

1. Należy dodać do projektu bibliotekę DTU

| Tibrary Manager 🗴  |                    |                   |  |  |  |
|--|--------------------|-------------------|--|--|--|
| 🔁 Add library 🗙 Delete library 🛛 😁 Properties 🙃 Details 🗍 🚸 Download missing libraries 🗍 🗐           | Placeholders 🏻 🎁 L | ibrary repository |  |  |  |
| Name   | Namespace          | Effective version |  |  |  |
| ≝… • 3SLicense = 3SLicense, 3.5.10.0 (3S - Smart Software Solutions GmbH)                            | _3S_LICENSE        | 3.5.10.0          |  |  |  |
| 🕮 🚥 🚾 BreakpointLogging = Breakpoint Logging Functions, 3.5.5.0 (3S - Smart Software Solutions GmbH) | BPLog              | 3.5.5.0           |  |  |  |
| 🗄 👓 🚥 CAA DTUtil Extern, 3.5.11.0 (CAA Technical Workgroup)  | DTU                | 3.5.11.0          |  |  |  |
| 🖳 👓 🚾 IoStandard = IoStandard, 3.5.10.0 (System)   | IoStandard         | 3.5.10.0          |  |  |  |
| SM3_Basic = SM3_Basic, 4.2.2.0 (3S - Smart Software Solutions GmbH)                                  | SM3_Basic          | 4.2.2.0           |  |  |  |
| 🕮 🚥 SM3_CNC = SM3_CNC, 4.2.1.1 (3S - Smart Software Solutions GmbH)                                  | SM3_CNC            | 4.2.1.1           |  |  |  |
| B  | SM3_Robotics       | 4.2.2.0           |  |  |  |
| CAA DTUtil Extern, 3.5.11.0 (CAA Technical Workgroup)  |                    |                   |  |  |  |
| 🖻 🗀 CAA DTUtil   |                    |                   |  |  |  |
| 🗉 🧰 Pictures   |                    |                   |  |  |  |
| 🧭 VersionConstants   |                    |                   |  |  |  |
| GetSupplierVersion   |                    |                   |  |  |  |
|  |                    |                   |  |  |  |
|  |                    |                   |  |  |  |

2. Do pobrania aktualnej daty i czasu ze sterownika wykorzystany zostanie blok funkcyjny GetDateAndTime



| tibrary Manager X  |                 |                   |                |         |         |                                     |  |
|--|-----------------|-------------------|----------------|---------|---------|-------------------------------------|--|
| 😤 Add library 🗙 Delete library 🔄 Properties 💿 Details   🔹 Download missing libraries 🛛 🔤 Placeholders 👔 Placeholders 👔 👔 Clarary repository  |                 |                   |                |         |         |                                     |  |
| Name   | Namespace       | Effective version |                |         |         |                                     |  |
| Im   | _3S_LICENSE     | 3.5.10.0          |                |         |         |                                     |  |
| BreakpointLogging = Breakpoint Logging Functions, 3.5.5.0 (3S - Smart Software Solutions GmbH)   | BPLog           | 3.5.5.0           |                |         |         |                                     |  |
| CAA DTUtil Extern, 3.5.11.0 (CAA Technical Workgroup)  | DTU             | 3.5.11.0          |                |         |         |                                     |  |
| IoStandard = IoStandard, 3.5.10.0 (System)   | IoStandard      | 3.5.10.0          |                |         |         |                                     |  |
| B → M SM3_Basic = SM3_Basic, 4.2.2.0 (3S - Smart Software Solutions GmbH)  | SM3_Basic       | 4.2.2.0           |                |         |         |                                     |  |
| ■ • • M3_CNC = SM3_CNC, 4.2.1.1 (3S - Smart Software Solutions GmbH)   | SM3_CNC         | 4.2.1.1           |                |         |         |                                     |  |
| B → M SM3_Robotics = SM3_Robotics, 4.2.2.0 (3S - Smart Software Solutions GmbH)  | SM3_Robotics    | 4.2.2.0           |                |         |         |                                     |  |
| CAA Dioti     Control     Contro     Control     Control     Control     Control     Control | FUNCTION_BLOCK  | GetDateAndTime    | Inherited from | Address | Initial | Comment                             |  |
| 🖃 🗀 Time and Date  | No. vEverute    | BOOL              |                |         |         | Dising edge: Action start   Falling |  |
| GetDateAndTime   | * xDone         | BOOL              |                |         |         | Action successfully completed       |  |
| SetDateAndTime   | K∲ xBusy        | BOOL              |                |         |         | Function block active               |  |
| 🖲 🗀 Time Zone Information  | * xError        | BOOL              |                |         |         | ``TRUE``: error occurred, function  |  |
| E-C Functions  | eError          | ERROR             |                |         |         | Error description for diagnosis     |  |
| 🖻 🗀 Utility Functions  | ✓ dtDateAndTime | DATE_AND_TIME     |                |         |         |                                     |  |
| 🗉 🚞 Global Constants   | 🍫 ePeriode      | RTCLK.PERIODE     |                |         |         | Current local time                  |  |
| 🖻 🚞 Structs  |                 |                   |                |         |         |                                     |  |
| 🗄 🦳 Pictures   |                 |                   |                |         |         |                                     |  |
|  |                 |                   |                |         |         |                                     |  |
| GetSupplierVersion   |                 |                   |                |         |         |                                     |  |

- W programie użyte zostaną również funkcje DTSplit oddzielająca poszczególne elementy daty i godziny, DateConcat – złożenie daty, TODConact – złożenie godziny, GetDayOfWeek – pobranie aktualnego dnia tygodnia
- 4. Definiujemy zmienne programowe

```
PLC_PRG 🗙
         PROGRAM PLC_PRG
     1
     2
Θ
         VAR
     3
            GetCurrentDateTime : DTU.GetDateAndTime;
     4
             CurrentDateAndTime : DATE AND TIME;
     5
     6
            Rok : UINT;
     7
            Miesiac : UINT;
            Dzien : UINT;
     8
     9
            Godzina : UINT;
    10
            Minuta : UINT;
    11
            Sekunda : UINT;
    12
    13
            data_tylko : DATE;
    14
            czas_tylko : TIME OF DAY;
    15
            dzien_tyg : DTU.RTCLK.WEEKDAY;
    16
            licznik: INT;
    17
            uiMillisecond: UINT;
    18
    19
             peError : DTU.caa.ERROR;
    20
    21
         END VAR
    22
```



5. Piszemy kod programu, realizujący odczyt aktualnej daty i czasu ze sterownika oraz wyciągnięcie i scalenie odpowiednich elementów daty i godziny

```
1
         GetCurrentDateTime(xExecute:=TRUE);
    2
-
    3
         IF GetCurrentDateTime.xDone THEN
     4
            CurrentDateAndTime:=GetCurrentDateTime.dtDateAndTime;
    5
             GetCurrentDateTime(xExecute:=FALSE);
     6
7
           DTU.DTSplit(CurrentDateAndTime,
    8
                         ADR (Rok),
    9
                         ADR(Miesiac),
    10
                         ADR(Dzien),
    11
                         ADR(Godzina),
    12
                         ADR(Minuta),
    13
                         ADR(Sekunda));
    14
   15
            data_tylko:=DTU.DateConcat(Rok, Miesiac, Dzien, peError:=peError);
   16
            czas_tylko:=DTU.TODConcat(Godzina, Minuta, Sekunda,uiMillisecond, peError:=peError);
    17
         END IF
   18
   19
         dzien_tyg:=DTU.GetDayOfWeek(data_tylko, peError:=peError);
    20
```

### **NTP SERVER**

1. Należy zalogować się do sterownika przez przeglądarkę internetową i przejść do zakładki Time And Date



## Time and Date Configuration

| Configuration  | Date (Timezone: LITC)   |       |
|--|---|-------|
| Network  | Date (Timezone: OTC)  |       |
| CAN  |   |       |
| Time and Date  | Year (e.g. 2012)  | 2019  |
| VNC-Server   |   |       |
| FTP-Server   | Month [1-12]  | 02    |
| SSH-Server   | Dev [4, 24]   |       |
| WEB-Server   | Day [1-31]  | 20    |
| <u>Users</u><br>SVC Config   | Hours [0-23]  | 11    |
| Reset Config   | Hours [0 20]  |       |
| Sunt and   | Minutes [0-59]  | 22    |
| System   |   |       |
| Info   | Seconds [0-59]  | 22    |
| Licenseinto  |   |       |
| Undate   | Change Time and Date  |       |
| Reboot   | change rime and bate  |       |
| DI C. Managar  | Timozono  |       |
|  |   |       |
| PLC-Manager  | Timezone  |       |
| Control  | Timezone  |       |
| Control<br>Config  | Timezone  | UTC ~ |
| <u>Control</u><br><u>Config</u><br><u>Application Info</u>   | Timezone  | UTC ~ |
| <u>Control</u><br><u>Config</u><br><u>Application Info</u><br><u>Application Files</u><br>Font Files   | Timezone<br>Change Timezone   | UTC ~ |
| <u>Control</u><br><u>Config</u><br><u>Application Info</u><br><u>Application Files</u><br><u>Font Files</u>  | Timezone<br>Change Timezone   | UTC ~ |
| <u>Control</u><br><u>Config</u><br><u>Application Info</u><br><u>Application Files</u><br><u>Font Files</u><br><b>Diagnostics</b>  | Timezone<br>Change Timezone   | UTC ~ |
| Control<br>Config<br>Application Info<br>Application Files<br>Font Files<br>Diagnostics<br>PLC Log   | Timezone<br>Change Timezone<br>Time syncing                                     | UTC ~ |
| <u>Control</u><br><u>Config</u><br><u>Application Info</u><br><u>Application Files</u><br><u>Font Files</u><br><b>Diagnostics</b><br><u>PLC Log</u><br><u>System Log</u><br>Ethernet               | Timezone<br>Change Timezone<br>Time syncing                                     | UTC ~ |
| <u>Control</u><br><u>Config</u><br><u>Application Info</u><br><u>Application Files</u><br><u>Font Files</u><br><b>Diagnostics</b><br><u>PLC Log</u><br><u>System Log</u><br><u>Ethernet</u><br>CAN | Timezone Change Timezone Time syncing   | UTC ~ |
| Control<br>Config<br>Application Info<br>Application Files<br>Font Files<br>Diagnostics<br>PLC Log<br>System Log<br>Ethernet<br>CAN<br>Storage   | Timezone<br>Change Timezone<br><u>Time syncing</u><br>use ntpdate               | UTC ~ |
| Control<br>Config<br>Application Info<br>Application Files<br>Font Files<br>Diagnostics<br>PLC Log<br>System Log<br>Ethernet<br>CAN<br>Storage<br>System Dump                                      | Timezone Change Timezone Time syncing use ntpdate NTP Server                    | UTC ~ |
| Control<br>Config<br>Application Info<br>Application Files<br>Font Files<br>Diagnostics<br>PLC Log<br>System Log<br>Ethernet<br>CAN<br>Storage<br>System Dump                                      | Timezone<br>Change Timezone<br><u>Time syncing</u><br>use ntpdate<br>NTP Server | UTC ~ |
| Control<br>Config<br>Application Info<br>Application Files<br>Font Files<br>Diagnostics<br>PLC Log<br>System Log<br>Ethernet<br>CAN<br>Storage<br>System Dump                                      | Timezone Change Timezone Time syncing use ntpdate NTP Server Save               | UTC ~ |

2. Zaznaczamy opcję use ntpdate oraz podajemy adres IP serwera np. 149.156.119.190

| Diagnostics                                     |              |                 |
|---|--------------|-----------------|
| <u>PLC Log</u><br><u>System Log</u><br>Ethernet | Time syncing |                 |
| CAN   | use ntpdate  |                 |
| <u>Storage</u><br>System Dump                   | NTP Server   | 149.156.119.190 |
|   | Save         |                 |



- 3. Zapisujemy ustawienia poprzez przycisk Save
- 4. Należy wykonać operacje restartu sterownika Reboot

