

APLIKAČNÍ POSTUP

Modbus RTU komunikace IDEC FT2J se senzory CO₂ a zápis dat na USB Flash disk



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Modbus RTU komunikace IDEC FT2J se senzory CO_2 a zápis dat na USB Flash disk

Abstrakt

Aplikační postup ukazuje jak zapisovat CO₂ měření z více senzorů najednou přes rozhraní Modbus do FT2J na externí paměť typu USB Flash disk, která se připojí do USB portu FT2J. Flash disk je pak možné z FT2J vytáhnout a vložit do PC.

HW komponent

- dotykový displej s integrovaným PLC FT2J-7U22RAF-B
- CO₂ senzory (17x Thermokon NOVOS 3 P CO₂ Temp RS485 2x PRODUAL)
- ethernet kabel pro nahrání projektu
- běžný USB Flash disk

SW komponenty

• vývojové prostředí pro PLC IDEC Automation Organizer





Důležitá poznámka

Aplikační postupy demonstrují typické úkony na konkrétních případech. Nekladou si za cíl kompletnost a v žádném případě nenahrazují návod k obsluze! Změna aplikačních postupů je vyhrazena.

Postup

- 1. Připojíme FT2J k počítači pomocí Ethernetového kabelu, abychom do něj mohli později nahrát program.
- 2. Propojíme fyzicky všechny senzory přes Modbus rozhraní do FT2J.
- 3. Založíme nový projekt ve vývojovém prostředí WindO/I-NV4.

| | Ŧ |
|-----------------|--|
| | |
| New | Recent Projects |
| | 1 CO2 senzory18.6.2024_NOVO5_final.pn4 |
| <u> </u> | |
| <u>Save</u> | |
| Save <u>A</u> s | |
| Print . | |
| | |
| | 🔛 WindO/I-NV4 Optjons 🔀 Exit WindO/I-NV4 |

4. Vybereme dotykový displej s PLC, kterým disponujeme. V našem případě FT2J-7U.

| Select Product Series | | | ? | × |
|--|---|--|---------------------|-----|
| Produc <u>t</u> Series: FT23-7U HG2J-7U HG5G/4G/3G-V HG2G-V HG2G-ST HG1G HG1P HG4G/3G(Multimedia) HG4G/3G HG2G-5F | Type Nu <u>m</u> ber: FT2J-7U22*AF-* | Description: 7 inch Operator Interface Controller with Ethernet LCD: WVGA 65536 Colors Touch Panel: Projected Ca | + Logic pacitive | |
| Installation Installation Uertical (Counter Clockwise) Vertical (<u>C</u> lockwise) Horizontal (<u>R</u> otate 180°) | | | | |
| | | < <u>P</u> revious <u>N</u> ext > | Can | cel |

5. V nabídce komunikačních ovladačů zvolíme Modbus RTU Master

| t Communication Driver nufacturer: Modbus mmunication Driver: odbus RTU Master odbus RTU Slave odbus TCP Client odbus TCP Server | ? × |
|---|------------------------------|
| Manufacturer: Modbus | |
| Communication Driver: Details: Modbus RTU Master For Modbus information, visit the web site at http://www.modbus.org/, and refer to Mindolus ASCII Master Modbus TCP Client WindO/I-NV4 Manuals and Revision history. | |
| | |
| | < <u>P</u> revious OK Cancel |

6. V kartě nastavení projektu v záložce komunikační rozhraní nastavíme Modbus dle vyžadovaných parametrů.

| terface Configuration | 1: | Interface Settings | | | |
|---|---------------------------------|----------------------|---------------------------------|-----|------|
| nterface | Function | F <u>u</u> nction: | External Device Communication 1 | - | |
| :OM(RS232C) | N/A | Baud Rate: | 38400 | - | |
| OM(RS422/485) | External Device Communication 1 | | | | |
| thernet | - | Data B <u>i</u> ts: | 8 | - | |
| Protocol 1 | N/A | Stop Bits: | 1 | - | |
| Protocol2 | N/A | <u>-</u> | - | | |
| Protocol3 | N/A | Parity: | Even | - | |
| Protocol4 | N/A | Elow Control: | None | - | |
| Protocol5 | N/A | <u>riow</u> control. | | | |
| Protocol6 | N/A | Serial Interface: | RS422/485 2-wire | • | |
| Protocol7 | N/A | | - | | |
| SB1(USB-A) | N/A | | | | |
| Protocol3 N/A Parity: Even Protocol4 N/A Elow Control: None Protocol6 N/A Serjal Interface: RS422/485 2-wire USB 1(USB-A) N/A N/A | | | | | |
| | | | | | |
| | | | | Def | ault |

| ttings: | | | | | | | | |
|--------------------|-------------------------|-----------------------------------|-------------------------|--------------|------------|-------------|---|--|
| xternal Device | External Device Name | External Device Communication | Communication Driver | Slave Number | IP Address | Port Number | ^ | |
| | 1 | External Device Communication 1 | Modbus RTU Master | 1 | | | | |
| | 2 | External Device Communication 1 | Modbus RTU Master | 2 | | | | |
| | 3 | External Device Communication 1 | Modbus RTU Master | 3 | | | | |
| | 4 | External Device Communication 1 | Modbus RTU Master | 4 | | | | |
| | 5 | External Device Communication 1 | Modbus RTU Master | 5 | | | | |
| | 6 | External Device Communication 1 | Modbus RTU Master | 6 | | | | |
| | 7 | External Device Communication 1 | Modbus RTU Master | 7 | | | | |
| | 8 | External Device Communication 1 | Modbus RTU Master | 8 | | | | |
| | 9 | External Device Communication 1 | Modbus RTU Master | 9 | | | | |
| | 10 | External Device Communication 1 | Modbus RTU Master | 10 | | | | |
| L | 11 | External Device Communication 1 | Modbus RTU Master | 11 | | | | |
| 2 | 12 | External Device Communication 1 | Modbus RTU Master | 12 | | | | |
| 1 | 13 | External Device Communication 1 | Modbus RTU Master | 13 | | | | |
| ł | 14 | External Device Communication 1 | Modbus RTU Master | 14 | | | | |
| i | 15 | External Device Communication 1 | Modbus RTU Master | 15 | | | | |
| | 16 | External Device Communication 1 | Modbus RTU Master | 16 | | | ~ | |
| <u>C</u> lear | Specify Sla | ive Number of Modbus RTU Master b | y Value of Device Addr | ess: | | | | |
| oansion Settin | as: | | | | | | | |
| xternal Device | ID Maximum num | her of multiple Read Write | | | | | | |
| Accinical Dictrice | | | | | | | | |

7. Nastavíme Slave number pro každý senzor zvlášť.

8. Na základní obrazovce přidáme názvy jednotlivých senzorů a vytvoříme číselné displeje.

| 1 Start screen [Base Screen] | | | | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| NOVOS 3 (16) | NOVOS 3 (17) | | PRODUAL W2 | PRODUAL B2 |
| 16:IR 300508 12345 | 17:IR 300506 12345 | | 18:IR 300003 12345 | 19:IR 300003 12345 |
| NOVOS 3 (15) | NOVOS 3 (14) | NOVOS 3 (13) | NOVOS 3 (12) | NOVOS 3 (11) |
| 15:17.300506 12345 | 14:IR 300500 12345 | 13:1R 300500 12345 | 12:1R 300500 12345 | 11:ir 300506 12345 |
| NOVOS 3 (10) | NOVOS 3 (09) | NOVOS 3 (08) | NOVOS 3 (07) | NOVOS 3 (06) |
| 10: IR 300506 12345 | 9.1R 300506 12345 | 8:IR 300506 12345 | 7:IR 300506 12345 | 12345 |
| NOVOS 3 (05) | NOVOS 3 (04) | NOVOS 3 (03) | NOVOS 3 (02) | NOVOS 3 (01) |
| 5:IR 300500 12345 | 4:IR 300506 12345 | 3:IR 300500 12345 | 2:IR 300506 12345 | 1:IR 300506 12345 |

 Pro každý displej si nastavíme příslušnou adresu, ze které senzor vyčítá hodnotu CO₂, například u Thermokon NOVOS 3 nastavíme IR 300506, v manuálu vidíme adresu 505, nicméně v některých případech je adresa posunuta o +1.

| | roperties of Numerical Display | ? × |
|--|--|-------------------|
| 12345 | General (View Format Data Over Trigger Condition Options Comment | |
| NOVOS 3 (14) NOVOS 3 (13) NOVOS 14.16.200200 13.16.200200 12.16.200 12.345 12.345 12.345 | Part Name: NumDisplay2 DisplayType DisplayType DisplayType DataErrmat | |
| Tag Editor ? × | Data Tyne: UBIN16(W) Dinits: 5 | |
| Target: External Device 16:16 | Display Floating Point Floating Dinits: 1 Floating Symbol: | |
| De <u>v</u> ice Type: IR (Input Register) | Suppress Zeros | |
| Address Number: 0 - | ✓ Display the minus sign Display the plus sign | |
| Show: All | Symbol to show when out of range or Error occurs: ?(question) | |
| Device Address Tag Name Comment Used IR 300500 0 | Display Method Display Deyjce Address: | |
| OK Cancel | OK Cancel | <u><</u> Basic |

10. Vytvoříme novou obrazovku a přidáme na plochu Data Log Display

| 12 | 34 | fx | | Sampling | Date | and | Time | NOVC |)S 3 | 3 (01) | NOVOS | 3 (02) | NOVOS | 3 (03) | NOVOS | 3 (04) | NOVOS | 3 (05) | NOVOS | 3 (06) |
|----------|-------------|------------------|------|--|-------|-----|-------|------|------|--------|----------|--------|-------|----------|-------|--------|----------|--------|-------|---|
| Da | ta Charts | Commands | Arra | | 07 | /01 | 13:57 | 1 | 1 | 12345 | | 12345 | | 12345 | | 12345 | ; | 12345 | | 12345 |
| Disp | lays | Commanda | - | | | | | | | | | | | | | | | | | |
| _ | - | • | | | | | | | | | | | | | | | | | | 1 |
| 12 | Numerical | Input | | 1. A. A. A. A. | 1.1 | 1.1 | | 1 | 1 | | 1.1 | 1.1 | | 1.1 | | 1.1 | | 1.1 | | 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - |
| AB | Character | Input | | | | | | | Ì. | | | | | | | | | | | |
| â | Picture Dis | splay | | | | • • | | | ÷ | · · · | | | | | | | | | | |
| | Messagel | Display | | | | | | | | | | | | | | | | | | · · · |
| a) | Message | Switching Displa | ву | an a | | | | 1.1 | ÷ | | | | | | | | | | | an an an |
| Ħ | Alarm List | Display | | | | | | | | | | | | | | | | | | J |
| F | Alarm Log | Display | | | | | | | | | | | | | | | _ | | - | |
| 目 | Data Log I | Display | | | | | | | • | | . | | | <u>.</u> | | | - | | | |
| | Numerical | Display | | | Opera | te | | | | - | - | | | | | - | | | | |
| . | Calendar | | | | • • | • • | | | • | | | | | | | | - | | | |

11. Ve vlastnostech Data Log displej přejdeme do druhé záložky Log a otevřeme Data Log Settings, vpravo vybereme Edit a nastavíme: a. Záložka General

| a. | Zaluzka Gene | ziai | | | | | |
|---|--------------------------------------|--------------|-------------|---------------|-------|-----|-----|
| Individual Settings | | | | | | ? | × |
| Channel Number: 1 | | | | | | | |
| General External Memory | Device (Data Options | | | | | | |
| Log function | | | | | | | |
| • Enable | ⊚ <u>D</u> isable | | | | | | |
| Ch <u>a</u> nnel Name: | CO2 | | | | | | |
| Condition of Writing to D | Data Storage Area | | | | | | |
| • Fixed Period | <u>T</u> ime: | | 60 🌲 s | ec | | | |
| O Event <u>B</u> it | | | | | | | |
| d. Założska General vidual Settings ? × anel Number: 1 znerał (Laternal Memory Device (Data (Options) Log function © Enable Disable hannel Name: CO2 Condition of Writing to Data Storage Area 60 s sc © Event Bit Device Address: © Event Word Device Address: © Event Word Device Address: © Beport when Count of Writings to Data Storage Area | | | | | | | |
| Monitor Count of Writi | ings to Data Storage Area: | | | | | | |
| Report when Count | of Writings to Data Storage | Areahas read | hed or exce | eded Threshol | _ | | |
| T <u>h</u> reshold: | ÷ | | | | | | |
| Report De <u>v</u> ice Addre | ess: | | | | | | |
| Monitor <u>%</u> Space Used | d in Data Storage Area: | | | | | | |
| Report when % Spa | ace <u>U</u> sed has reached or exce | eded Thresh | bld | | | | |
| Thres <u>h</u> old | * | | | | | | |
| Report Devi <u>c</u> e Addre | ess: | | | | | | |
| 🔲 Clear <u>L</u> og Data: | | | | | | | |
| Store Status of Sampli | ing: | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | OK | Can | cal |
| | | | | | VIS | Can | COL |

| b. Záložka External Mer | mory Device ? × |
|--|------------------|
| Channel Number: 1 General External Memory Device Data Options | |
| Batch Irigger Device Address: Fijle Name: LOGO01 Specify File Name by Value of Device Address: Add Device Address data to File Name: Add Time Stamp: Store Fijepath: Set limit on files: | .CSV .CSV |
| Real Time Filg Name: CO2_NOVOS Specify File Name by Value of Device Address: Add Device Address data to File Name: | .csv |
| Add Time Stam <u>p</u> : YY+MM+DD | |
| Save Data Log Data and Display in Line Chartor Data Log Dis File Name: CO2_NOVOS.BIN | play: |
| | OK Cancel |

| c. | V | záložce | Data | přidáme | jednotlivé | adresy |
|----|---|---------|------|---------|------------|--------|
|----|---|---------|------|---------|------------|--------|

| enera | External Memor | yDevice Data Optio | ins | | | | | |
|-------|-----------------------|-------------------------|---------------|----------|---------------------|-------------|---------------|----|
| Di | solav Data stored | in External memory davi | ice on Custom | Vab Daga | | | | - |
| Us | e Text Manager | In Excernal memory devi | ice on custom | vebrage | | | | |
| Outou | it Items | | | | | | | |
| | Header | | | | | | | |
| 1 | Label | | | | | | | |
| 1 | Sampling <u>T</u> ime | | | | | | | |
| | La <u>b</u> el: | Sampling Date a | nd Time | | | | | |
| Outpu | t Data - | | | | | | | _ |
| No. | Label | Top Device Address | Data Type | Words | Output Example | ^ | <u>A</u> dd | |
| 1 | NOVOS 3 (01) | 1:IR 300506 | UBIN 16(W) | 1 | 12345 | | Edit | - |
| 2 | NOVOS 3 (02) | 2:IR 300506 | UBIN16(W) | 1 | 12345 | | | |
| 3 | NOVOS 3 (03) | 3:IR 300506 | UBIN16(W) | 1 | 12345 | L | Delete | •• |
| 4 | NOVOS 3 (04) | 4:IR 300506 | UBIN16(W) | 1 | 12345 | | | |
| 5 | NOVOS 3 (05) | 5:IR 300506 | UBIN 16(W) | 1 | 12345 | | U <u>p</u> | |
| 6 | NOVOS 3 (06) | 6:IR 300506 | UBIN 16(W) | 1 | 12345 | | D <u>o</u> wn | |
| 7 | NOVOS 3 (07) | 7:IR 300506 | UBIN16(W) | 1 | 12345 | | | |
| 8 | NOVOS 3 (08) | 8:IR 300506 | UBIN16(W) | 1 | 12345 | | | |
| 9 | NOVOS 3 (09) | 9:IR 300506 | UBIN 16(W) | 1 | 12345 | | | |
| 10 | NOVOS 3 (10) | 10:IR 300506 | UBIN16(W) | 1 | 12345 | | | |
| 11 | NOVOS 3 (11) | 11:IR 300506 | UBIN16(W) | 1 | 12345 | | | |
| 12 | NOVOS 3 (12) | 12:IR 300506 | UBIN16(W) | 1 | 12345 | | | |
| 13 | NOVOS 3 (13) | 13:IR 300506 | UBIN 16(W) | 1 | 12345 | | | |
| 14 | NOVOS 3 (14) | 14:IR 300506 | UBIN16(W) | 1 | 12345 | - | | |
| | | | | | Total: 10 words(12) | words may) | | |

12. Konfigurací potvrdíme kliknutím na tlačítko OK.

| Edit Data | ? | \times |
|---|-------|----------|
| Data Number: 1 Label: NOVOS 3 (01) Data Type: UBIN16(W) Dgvice Address: 1:IR 300506 | | |
| Display Type Counting Method: | | |
| Digits: 5 | | |
| Display <u>F</u> loating Point | | |
| Floating Digits: 1 | | |
| Floating Symbol: .(dot) | ancel | |

13. Nyní máme pro měření vše nastaveno a vložíme USB Flash disk do FT2J USB slotu 1.

14. Nahrajeme program pomocí tlačítka download do PLC a vyhledáme IP adresu pomocí Search.

| Download | | | | ? × |
|--|---|--|---|------------------------|
| Communication with: Port: | Operator Inter Ethernet | ace | | <u>C</u> omm. Settings |
| Target IP Address 192.168.1.150 | Target Port No. 2537 | Type No. FT2J-7U22RAF-* | MAC Address 00:03:7B:24:02:28 | Search Target List |
| Download System So When downloading th Also, the settings in "I in "Communication and" After downloading, e Clear the following data: Values of Keep Do Ajarm Log Data Data Log Data Opgration Log Da | oftware and OS fordb ie OS, you cannot do rarget List" dialog b terface" tab on "Proj execute the ladder pr evices ta | ly wnload files to exter xx are ignored and " tx Settings" dialog 1 ograms automatically | nal memory. ° Settings" oxis applied. | |
| Download following files Recipe Files Dicture Files Sound Files Custom Web Page | s to External Memory a Files | Device: | Downle | oad Cancel |

15. Zvolíme download a program se nahraje do PLC 16. Nyní se budou zapisovat data ze senzorů dle nastavení 1x za 60 s na paměť USB

Stažení dat

 Po měření, vypneme PLC a USB flash disk vložíme do PC, kde si zkopírujeme soubory s příponou .csv, otevřeme tabulku, označíme všechny řádky z měření a klikneme na ikonu Text do Sloupců

| ■ 1) - (* -) = | |
|--|---|
| Domů Vložení Rozložení stránky Vzorce Data Revize | Zobrazení |
| Připojení 🤰 | Vymazat |
| Z aplikace Z Z Z jiných Existující Aktualizovat Z | Seřadit Filtr |
| Access webu textu zdrojů v připojení vše v Se Upravit odkazy A | • Upresnit sloupců |
| AR | 2 (01)" "NOVOS 2 (02)" "NOVOS 2 (02)" "NO |
| Aa P C D E E C | 3(02) , NOVO33(02) , NOVO33(03) , NO |
| 433 06/20/2014 15:05:09.547.541.533.543.541.548.538.557.608.563.527.535. | 504,589,539,522,473,545,600 |
| 434 06/20/2024 15:06:09,550,540,534,543,541,550,539,558,606,564,529,534,5 | 507,589,539,519,471,545,600 |
| 435 06/20/201 4 15:07:09,550,543,533,544,544,545,539,559,607,564,530,531,5 | 505,586,539,520,469,544,600 |
| 436 06/20/2014 15:08:09,551,542,531,541,544,547,538,562,608,562,529,531,5 | 505,589,539,521,469,544,602 |
| 437 06/20/2014 15:09:09,551,543,528,543,545,544,536,561,608,559,529,526,5 | 504,588,538,523,471,544,603 |
| 439 06/20/2014 15:11:09:545:545:526:538:545:547:538:560:609:557:532:524: | 511.586.538.525.467.544.604 |
| 440 06/20/2014 15:12:09,548,546,526,537,541,546,542,560,610,556,530,525,5 | 509,583,537,526,470,544,603 |
| 441 06/20/20 4 15:13:09,550,547,526,539,540,546,540,559,611,557,532,528,5 | 505,580,534,525,472,544,602 |
| 442 06/20/20. 4 15:14:09,550,547,525,537,539,545,538,559,611,556,530,527,5 | 505,577,538,521,472,544,602 |
| 443 06/20/2014 15:15:09,549,542,524,534,536,546,538,561,612,558,531,527,5 | 506,578,538,521,474,545,601 |
| 444 06/20/20.4 15:16:09,549,542,524,536,535,546,538,563,613,557,528,525,5 445 06/20/2014 15:17:09 549 539 523 538 536 546 537 566 614 557 530 525 | 502 578 539 524 470 545 601 |
| 446 06/20/2014 15:18:09.547.536.523.538.538.546.535.563.615.556.532.526.5 | 500,579,541,525,467,545,602 |
| 447 06/20/2014 15:19:09,547,535,523,540,539,545,537,563,613,557,534,525,4 | 498,578,541,525,467,545,602 |
| 448 06/20/2024 15:20:09,548,538,519,541,542,547,536,563,611,555,534,527,4 | 498,579,543,525,468,545,602 |
| 449 06/20/2014 15:21:09,548,538,522,540,542,545,534,561,611,556,533,530,4 | 499,578,545,524,466,545,603 |
| 450 06/20/2014 15:22:09,543,538,521,541,542,544,535,563,608,553,532,531,5 | 501,580,541,523,467,545,602 |
| 431 00/20/20.4 15:23:09,544,541,522,541,539,545,537,504,008,553,532,529,5 452 06/20/2014 15:24:09 544 543 522 541 538 547 539 564 607 551 532 531 9 | 500 585 541 524 471 545 602 |
| 453 06/20/2014 15:25:09.547.544.523.539.541.550.545.565.607.553.531.529.5 | 500,586,538,525,473,546,602 |
| 454 06/20/2024 15:26:09,549,546,524,539,542,549,543,564,606,554,533,529,5 | 503,586,542,526,473,546,602 |
| 455 06/20/2014 15:27:09,549,546,523,537,545,550,543,562,608,556,531,525,5 | 502,586,541,526,474,546,602 |
| 456 06/20/2014 15:28:09,547,546,521,537,545,549,540,562,607,559,527,525,5 | 500,584,542,524,472,546,602 |
| 457 06/20/2014 15:29:09,548,546,519,541,548,548,548,546,560,603,560,525,527,5 | 503,581,539,525,473,546,603 |
| 438 06/20/2014 15:30:05,545,545,515,541,546,545,545,545,501,600,500,521,525, | 501,581,558,520,475,540,004 |
| 460 06/20/2014 15:32:09,554,547,522,540,543,545,543,563,603,559,522,531,5 | 504,581,540,524,468,546,605 |
| 461 06/20/20 4 15:33:09,554,544,522,539,543,545,542,563,604,558,522,533,5 | 506,580,541,523,468,546,606 |
| 462 06/20/20. 4 15:34:09,553,547,521,539,545,545,542,563,608,560,523,534,5 | 505,580,543,521,469,546,606 |
| 463 06/20/2014 15:35:09,553,544,521,542,545,545,539,561,604,559,522,531,5 | 504,579,546,523,468,546,606 |
| 404 00/20/20/4 10:30:09,552,544,521,544,547,545,541,561,602,557,518,529,5 | 505 582 545 523 469 547 605 |
| 466 06/20/2014 15:38:09.549.542.521.546.542.554.537.561.600.555.519.529.5 | 505,582,543,524,471,547,605 |
| 467 06/20/2014 15:39:09,549,540,517,547,542,554,536,563,603,557,521,529,5 | 506,582,539,526,470,547,605 |
| 468 06/20/2024 15:40:09,551,541,516,547,542,553,537,563,604,556,521,531,5 | 505,582,538,527,471,547,606 |
| 469 06/20/2014 15:41:09,551,543,515,549,544,552,538,563,604,556,520,532,5 | 505,582,543,529,472,547,605 |
| 470 06/20/2014 15:42:09,551,545,515,547,544,553,538,563,605,558,526,533,5 | 504,582,544,528,469,547,605 |

2. V okně vybereme možnost Oddělovač a dáme Další



3. V následujícím okně zvolíme typ oddělovače dat a potvrdíme tlačítkem Další

| Průvodce převodem textu do slo | սրշů (2/3) | | ? | \times |
|--|--|---|---|-----------------------------------|
| Zde můžete nastavit oddělovače da Oddělovače Středník Dosloupn Včárka Mezera Jiné: Náhled dat | at. Náhled textu s a nost oddělovačů jak Ilifikátor: | o jeden | in oddělovačů je u | iveden níže. |
| Sampling Date and Time 06/19/2024 17:09:38 06/19/2024 17:10:38 06/19/2024 17:11:38 06/20/2024 08:04:10 | NOVOS 3 (01) 1537 1533 1530 709 | NOVOS 3 (02) 1552 1549 1550 701 | NOVOS 3 (03) 1506 1503 1502 679 | NOV 150 149 149 699 V |
| < | | | | > |
| | Cancel | < <u>Z</u> pět | <u>D</u> alší > I | Do <u>k</u> ončit |

4. Nakonec si zvolíme formát dat dle našich preferencí a zvolíme Dokončit

| růvodce převodem textu do sl | oupců (3/3) | | | ? | > | × |
|---|---|---|--|------------------|--|--------|
| ide můžete vybrat sloupce a nast Formát dat ve sloupcích © Obecný O Text O Datu <u>m</u> : DMR <u>N</u> eimportovat sloupec (přesk | avit formát dat. Formát Ot hodnoty n očit) | pecný převádí číseln a data a všechny zl Upře | é hodnoty na bývající hodno snit | čísla, oty na | datumo text. | |
| | | | | | | |
| يَّا: \$A\$8 Náhled dat | | | | | 1 | E. |
| Náhled dat | Obecný | Obecný | Obecný | | Dber | |
|): \$A\$8 Náhled dat <u>Obecný</u> Sampling Date and Time | Obecný NOVOS 3 (01) | Obecný NOVOS 3 (02) | Obecný NOVOS 3 | (03) | | |
| I: \$A\$8 Nåhled dat <u>Dhecný</u> Sampling Date and Time 06/19/2024 17:09:38 | Obecný NOVOS 3 (01) 1537 | Obecný NOVOS 3 (02) 1552 | Obecný NOVOS 3 1506 | (03) | Ober NOV | ~ |
| <pre>/!: \$A\$8 Náhled dat <u>Obecný</u> Sampling Date and Time 06/19/2024 17:09:38 06/19/2024 17:10:38</pre> | Obecný NOVOS 3 (01) 1537 1533 | Obecný NOVOS 3 (02) 1552 1549 | Obecný NOVOS 3 1506 1503 | (03) | 0be NOV0 150 149 | ^ |
| <pre>J: \$A\$8 Nåhjed dat Decný Sampling Date and Time 06/19/2024 17:09:38 06/19/2024 17:10:38 06/19/2024 17:11:38</pre> | Obecný NOVOS 3 (01) 1537 1533 1530 | Obecný NOVOS 3 (02) 1552 1549 1550 | Obecný NOVOS 3 1506 1503 1502 | (03) | Obe NOV 150 149 149 | ^ |
| <pre>il: \$A\$8 Náhled dat Decrv Sampling Date and Time 06/19/2024 17:09:38 06/19/2024 17:10:38 06/19/2024 17:11:38 06/20/2024 08:04:10</pre> | Dbecný NOVOS 3 (01) 1537 1533 1530 709 | Dbecný NOVOS 3 (02) 1552 1549 1550 701 | Obecný NOVOS 3 1506 1503 1502 679 | (03) | Ober NOV 150 149 149 699 | ~ |
| <pre>D: \$A\$8 Náhled dat Dbecný Sampling Date and Time 06/19/2024 17:09:38 06/19/2024 17:10:38 06/19/2024 17:11:38 06/20/2024 08:04:10 </pre> | Obecný NOVOS 3 (01) 1537 1533 1530 709 | Dbecný NoVOS 3 (02) 1552 1549 1550 701 | Obecný NOVOS 3 1506 1503 1502 679 | (03) | Dber NOV(150 149 149 699 | ~ ~ |

5. Nyní máme data uspořádaná v tabulce, která můžeme následně analyzovat a porovnávat dle potřeby.

| 7 | | | | | | | | | | | | | |
|----|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 8 | Sampling Date and Time | NOVOS 3 (01) | NOVOS 3 (02) | NOVOS 3 (03) | NOVOS 3 (04) | NOVOS 3 (05) | NOVOS 3 (06) | NOVOS 3 (07) | NOVOS 3 (08) | NOVOS 3 (09) | NOVOS 3 (10) | NOVOS 3 (11) | NOVOS 3 (12) |
| 9 | 06/19/2024 17:09:38 | 1537 | 1552 | 1506 | 1504 | 1546 | 1548 | 1555 | 1593 | 1637 | 1579 | 1518 | 1562 |
| 10 | 06/19/2024 17:10:38 | 1533 | 1549 | 1503 | 1498 | 1546 | 1545 | 1549 | 1593 | 1633 | 1581 | 1517 | 1559 |
| 11 | 06/19/2024 17:11:38 | 1530 | 1550 | 1502 | 1494 | 1543 | 1544 | 1544 | 1593 | 1631 | 1579 | 1516 | 1561 |
| 12 | 06/20/2024 08:04:10 | 709 | 701 | 679 | 699 | 712 | 713 | 688 | 732 | 777 | 729 | 696 | 704 |
| 13 | 06/20/2024 08:05:10 | 707 | 701 | 679 | 697 | 712 | 712 | 689 | 732 | 778 | 729 | 695 | 701 |
| 14 | 06/20/2024 08:06:10 | 709 | 702 | 676 | 697 | 708 | 713 | 688 | 733 | 780 | 732 | 693 | 701 |
| 15 | 06/20/2024 08:07:10 | 707 | 703 | 675 | 694 | 706 | 715 | 687 | 733 | 779 | 730 | 693 | 701 |
| 16 | 06/20/2024 08:08:10 | 708 | 704 | 677 | 693 | 705 | 716 | 688 | 732 | 781 | 728 | 690 | 695 |
| 17 | 06/20/2024 08:09:10 | 708 | 704 | 677 | 695 | 702 | 713 | 688 | 734 | 777 | 732 | 689 | 694 |
| 18 | 06/20/2024 08:10:10 | 707 | 700 | 675 | 695 | 700 | 713 | 689 | 731 | 778 | 730 | 689 | 689 |
| 19 | 06/20/2024 08:11:10 | 708 | 700 | 675 | 696 | 701 | 712 | 689 | 728 | 775 | 732 | 687 | 686 |
| 20 | 06/20/2024 08:12:10 | 707 | 697 | 673 | 695 | 699 | 711 | 686 | 728 | 769 | 731 | 686 | 685 |
| 21 | 06/20/2024 08:13:10 | 705 | 697 | 672 | 696 | 697 | 709 | 686 | 730 | 769 | 730 | 684 | 684 |
| 22 | 06/20/2024 08:14:10 | 707 | 696 | 675 | 696 | 694 | 706 | 685 | 732 | 765 | 731 | 682 | 684 |
| 23 | 06/20/2024 08:15:10 | 706 | 698 | 674 | 695 | 695 | 703 | 685 | 730 | 765 | 724 | 682 | 684 |
| 24 | 06/20/2024 08:16:10 | 705 | 698 | 669 | 693 | 694 | 702 | 687 | 731 | 763 | 721 | 683 | 685 |
| 25 | 06/20/2024 08:17:10 | 704 | 697 | 668 | 692 | 694 | 703 | 687 | 730 | 764 | 722 | 684 | 686 |
| 26 | 06/20/2024 08:18:10 | 703 | 696 | 670 | 692 | 692 | 704 | 687 | 729 | 763 | 721 | 687 | 685 |
| 27 | 06/20/2024 08:19:10 | 701 | 696 | 668 | 694 | 690 | 707 | 688 | 731 | 764 | 720 | 687 | 683 |
| 28 | 06/20/2024 08:20:10 | 699 | 695 | 668 | 692 | 691 | 708 | 687 | 730 | 763 | 719 | 685 | 683 |
| 29 | 06/20/2024 08:21:10 | 699 | 693 | 669 | 691 | 689 | 707 | 689 | 734 | 758 | 719 | 683 | 682 |
| 30 | 06/20/2024 08:22:10 | 698 | 690 | 673 | 691 | 689 | 708 | 688 | 733 | 758 | 717 | 684 | 678 |
| 31 | 06/20/2024 08:23:10 | 697 | 692 | 673 | 692 | 691 | 707 | 688 | 731 | 758 | 719 | 682 | 678 |
| 32 | 06/20/2024 08:24:10 | 697 | 693 | 673 | 692 | 691 | 706 | 688 | 730 | 763 | 725 | 681 | 676 |
| 33 | 06/20/2024 08:25:10 | 695 | 691 | 672 | 693 | 688 | 704 | 689 | 728 | 763 | 724 | 680 | 676 |
| 34 | 06/20/2024 08:26:10 | 695 | 692 | 670 | 691 | 689 | 706 | 690 | 724 | 761 | 725 | 676 | 675 |
| 35 | 06/20/2024 08:27:10 | 692 | 694 | 669 | 690 | 687 | 708 | 686 | 723 | 760 | 725 | 672 | 673 |
| 36 | 06/20/2024 08:28:10 | 692 | 694 | 667 | 693 | 685 | 709 | 684 | 722 | 758 | 727 | 670 | 671 |
| 37 | 06/20/2024 08:29:10 | 692 | 695 | 672 | 692 | 682 | 708 | 681 | 724 | 757 | 727 | 669 | 669 |