

# Bloc Fonction



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N° Indigo 0 825 825 679  
0.15€ TTC/mm

|           |   |
|-----------|---|
| Référence | MTCP_ETN Client   |
| Révision  | 2.3   |
| Auteur    | JP Viskovic   |
| Date      | 11/01/2018  |
| + Support | <a href="http://support-omron.fr/">http://support-omron.fr/</a> |

## Bloc fonction Modbus TCP Client dédié ETN21 Unit n°0

|                           |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
|---------------------------|--|-----------|------------|-------------------------|--------------------|--------------------|--------------|--------------------|-------------------|-------------------|-----------------------|--|-----------|---|---------------------|--------------------|-------------------------|--------------------|----------------------|------------------|--------------------|------------------|-----------------|--|--|-----------|--|-------------------------|--------------------|---------------------|--------------------|----------------------|------------------|------------------|------------------|----------------|--|
| Fonction                  | Client Modbus TCP destiné aux cartes ETN21 unit n°0  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| Connexion                 | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">MTCP_ETN_Connect</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(BOOL) EN</td> <td style="width: 50%;">(BOOL) ENO</td> </tr> <tr> <td>(UINT) IP_Address1</td> <td>(BOOL) Error</td> </tr> <tr> <td>(UINT) IP_Address2</td> <td>(WORD) Error Code</td> </tr> <tr> <td>(UINT) IP_Adresse</td> <td>(BOOL) Waiting_Server</td> </tr> <tr> <td>(UINT) IP_Address4</td> <td></td> </tr> <tr> <td>(BOOL) Connect</td> <td></td> </tr> </table> </div> |           |            | (BOOL) EN               | (BOOL) ENO         | (UINT) IP_Address1 | (BOOL) Error | (UINT) IP_Address2 | (WORD) Error Code | (UINT) IP_Adresse | (BOOL) Waiting_Server | (UINT) IP_Address4   |           | (BOOL) Connect  |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (BOOL) EN                 | (BOOL) ENO   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (UINT) IP_Address1        | (BOOL) Error   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (UINT) IP_Address2        | (WORD) Error Code  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (UINT) IP_Adresse         | (BOOL) Waiting_Server  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (UINT) IP_Address4        |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (BOOL) Connect            |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| Lecture/Ecriture          | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">MTCP_ETN_Fn01</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(BOOL) EN</td> <td style="width: 50%;">(BOOL) ENO</td> </tr> <tr> <td>(UINT) Coil_Address</td> <td>(UINT) Rcv_Counter</td> </tr> <tr> <td>(UINT) Coil_Qty</td> <td>(BOOL) Error</td> </tr> <tr> <td>(UINT) RespData_DM</td> <td>(INT) Error_Code</td> </tr> <tr> <td>(BOOL) Cmd_Read</td> <td></td> </tr> <tr> <td>(WORD) Slaveld</td> <td></td> </tr> </table> </div>            | (BOOL) EN | (BOOL) ENO | (UINT) Coil_Address     | (UINT) Rcv_Counter | (UINT) Coil_Qty    | (BOOL) Error | (UINT) RespData_DM | (INT) Error_Code  | (BOOL) Cmd_Read   |                       | (WORD) Slaveld   |           | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">MTCP_ETN_Fn03</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(BOOL) EN</td> <td style="width: 50%;">(BOOL) ENO</td> </tr> <tr> <td>(UINT) Register_Address</td> <td>(UINT) Rcv_Counter</td> </tr> <tr> <td>(UINT) Register_Qty</td> <td>(BOOL) Error</td> </tr> <tr> <td>(UINT) RespData_DM</td> <td>(INT) Error_Code</td> </tr> <tr> <td>(BOOL) Cmd_Read</td> <td></td> </tr> <tr> <td>(WORD) Slaveld</td> <td></td> </tr> </table> </div> | (BOOL) EN           | (BOOL) ENO         | (UINT) Register_Address | (UINT) Rcv_Counter | (UINT) Register_Qty  | (BOOL) Error     | (UINT) RespData_DM | (INT) Error_Code | (BOOL) Cmd_Read |  | (WORD) Slaveld   |           | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">MTCP_ETN_Fn05</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(BOOL) EN</td> <td style="width: 50%;">(BOOL) ENO</td> </tr> <tr> <td>(UINT) Coil_Address</td> <td>(UINT) Rcv_Counter</td> </tr> <tr> <td>(UINT) Value</td> <td>(BOOL) Error</td> </tr> <tr> <td>(BOOL) Cmd_Write</td> <td>(INT) Error_Code</td> </tr> <tr> <td>(WORD) Slaveld</td> <td></td> </tr> </table> </div> | (BOOL) EN               | (BOOL) ENO         | (UINT) Coil_Address | (UINT) Rcv_Counter | (UINT) Value         | (BOOL) Error     | (BOOL) Cmd_Write | (INT) Error_Code | (WORD) Slaveld |  |
| (BOOL) EN                 | (BOOL) ENO   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (UINT) Coil_Address       | (UINT) Rcv_Counter   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (UINT) Coil_Qty           | (BOOL) Error   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
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| (BOOL) Cmd_Read           |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (WORD) Slaveld            |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
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| (WORD) Slaveld            |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
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| (BOOL) Cmd_Write          | (INT) Error_Code   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (WORD) Slaveld            |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
|                           | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">MTCP_ETN_Fn06</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(BOOL) EN</td> <td style="width: 50%;">(BOOL) ENO</td> </tr> <tr> <td>(UINT) Register_Address</td> <td>(UINT) Rcv_Counter</td> </tr> <tr> <td>(UINT) Value</td> <td>(BOOL) Error</td> </tr> <tr> <td>(BOOL) Cmd_Write</td> <td>(INT) Error_Code</td> </tr> <tr> <td>(WORD) Slaveld</td> <td></td> </tr> </table> </div>   | (BOOL) EN | (BOOL) ENO | (UINT) Register_Address | (UINT) Rcv_Counter | (UINT) Value       | (BOOL) Error | (BOOL) Cmd_Write   | (INT) Error_Code  | (WORD) Slaveld    |                       | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">MTCP_ETN_Fn0F</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(BOOL) EN</td> <td style="width: 50%;">(BOOL) ENO</td> </tr> <tr> <td>(UINT) Coil_Address</td> <td>(UINT) Rcv_Counter</td> </tr> <tr> <td>(UINT) Coil_Qty</td> <td>(BOOL) Error</td> </tr> <tr> <td>(WORD) Dataddress_DM</td> <td>(INT) Error_Code</td> </tr> <tr> <td>(BOOL) Cmd_Write</td> <td></td> </tr> <tr> <td>(WORD) Slaveld</td> <td></td> </tr> </table> </div> | (BOOL) EN | (BOOL) ENO  | (UINT) Coil_Address | (UINT) Rcv_Counter | (UINT) Coil_Qty         | (BOOL) Error       | (WORD) Dataddress_DM | (INT) Error_Code | (BOOL) Cmd_Write   |                  | (WORD) Slaveld  |  | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">MTCP_ETN_Fn10</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">(BOOL) EN</td> <td style="width: 50%;">(BOOL) ENO</td> </tr> <tr> <td>(UINT) Register_Address</td> <td>(UINT) Rcv_Counter</td> </tr> <tr> <td>(UINT) Register_Qty</td> <td>(BOOL) Error</td> </tr> <tr> <td>(WORD) Dataddress_DM</td> <td>(INT) Error_Code</td> </tr> <tr> <td>(BOOL) Cmd_Write</td> <td></td> </tr> <tr> <td>(WORD) Slaveld</td> <td></td> </tr> </table> </div> | (BOOL) EN | (BOOL) ENO   | (UINT) Register_Address | (UINT) Rcv_Counter | (UINT) Register_Qty | (BOOL) Error       | (WORD) Dataddress_DM | (INT) Error_Code | (BOOL) Cmd_Write |                  | (WORD) Slaveld |  |
| (BOOL) EN                 | (BOOL) ENO   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (UINT) Register_Address   | (UINT) Rcv_Counter   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
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| (WORD) Slaveld            |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (BOOL) EN                 | (BOOL) ENO   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
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| (BOOL) Cmd_Write          |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
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| (BOOL) EN                 | (BOOL) ENO   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
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| (BOOL) Cmd_Write          |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| (WORD) Slaveld            |  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| Fichier                   | <a href="#">MTCP_ETN_Client.zip</a>  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| API                       | - CJ1xx-V3 + CJ1W-ETN21 et CJ2H/M + CJ1W-ETN21<br>- CS1xx + CS1W-ETN21   |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |
| Restriction d'utilisation | <b>La carte ETN21 doit être configure en Unit No 0</b><br><b>Le FB utilise le socket n°1 et le port TCP 502</b>  |           |            |                         |                    |                    |              |                    |                   |                   |                       |  |           |   |                     |                    |                         |                    |                      |                  |                    |                  |                 |  |  |           |  |                         |                    |                     |                    |                      |                  |                  |                  |                |  |

| Conditions d'utilisation | <p>Le bloc fonction Modbus TCP Client propose certaines fonctionnalités de lecture/écriture conformément aux spécifications définies par <a href="#">l'organisation Modbus</a>.</p> <p>Les blocs fonction MTCP_ETN_Client sont proposés 'tel que' et peuvent servir de base de développement. Les utilisateurs doivent, au préalable, tester leur adéquation avec l'application finale.</p> <p><b>Omron France ne pourra en aucun cas être tenu pour responsable en cas de dysfonctionnement de l'application finale.</b></p>   |  |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
|--------------------------|---|--|-----------------|---------------|------|------------|---------------|------|-------------------|---------------|------|------------------------|---------------|------|----------------------|---------------|------|-------------------|---------------|------|-----------------------|---------------|------|----------------------|---------------|------|--------------------------|---------------|------|-------------------------------|------------------|------|---------|--------------|----------|---------------|------------------------------------|-----------|---------------|---------------------------------|------|---------|--------------|------------------|------------------|------------------------|------------|------------------|--|
| Principe                 | <p>Le bloc fonction MTCP_ETN_Connect établit une connexion avec un serveur Modbus TCP dès lors que l'entrée Connect est active.</p> <p>La sortie ENO du FB connect autorise l'exécution des FB de lecture/écriture via l'entrée EN.</p> <p>Liste des commandes de lecture/écriture implémentées</p> <table border="1" data-bbox="472 689 1390 1025"> <thead> <tr> <th>Code</th> <th>Fonction Modbus</th> <th>Bloc fonction</th> </tr> </thead> <tbody> <tr> <td>0x01</td> <td>Read coils</td> <td>MTCP_ETN_Fn01</td> </tr> <tr> <td>0x02</td> <td>Read Input Status</td> <td>MTCP_ETN_Fn02</td> </tr> <tr> <td>0x03</td> <td>Read Holding Registers</td> <td>MTCP_ETN_Fn03</td> </tr> <tr> <td>0x04</td> <td>Read Input Registers</td> <td>MTCP_ETN_Fn04</td> </tr> <tr> <td>0x05</td> <td>Write Single Coil</td> <td>MTCP_ETN_Fn05</td> </tr> <tr> <td>0x06</td> <td>Write Single Register</td> <td>MTCP_ETN_Fn06</td> </tr> <tr> <td>0x0F</td> <td>Write Multiple Coils</td> <td>MTCP_ETN_Fn0F</td> </tr> <tr> <td>0x10</td> <td>Write Multiple Registers</td> <td>MTCP_ETN_Fn10</td> </tr> <tr> <td>0x17</td> <td>Read Write Multiple Registers</td> <td>MTCP_Client_Fn17</td> </tr> </tbody> </table> <p><b>Mémoires utilisées</b></p> <p>par les blocs fonction</p> <table border="1" data-bbox="408 1171 1347 1272"> <thead> <tr> <th>Type</th> <th>adresse</th> <th>Descriptions</th> </tr> </thead> <tbody> <tr> <td>émission</td> <td>D32500-D32506</td> <td>Zone de consignation de la requête</td> </tr> <tr> <td>réception</td> <td>D32510-D32642</td> <td>Zone de réception de la réponse</td> </tr> </tbody> </table> <p>Drapeaux et commandes relatifs à la carte ETN21 (<b>Unit n°0</b>)</p> <table border="1" data-bbox="408 1339 1474 1451"> <thead> <tr> <th>Type</th> <th>adresse</th> <th>Descriptions</th> </tr> </thead> <tbody> <tr> <td>Drapeau/commande</td> <td>CIO1500- CIO1524</td> <td>Pour plus de détails :</td> </tr> <tr> <td>Paramètres</td> <td>D 30000 - D30099</td> <td><a href="#">Socket Service de W421</a></td> </tr> </tbody> </table> | Code                                   | Fonction Modbus | Bloc fonction | 0x01 | Read coils | MTCP_ETN_Fn01 | 0x02 | Read Input Status | MTCP_ETN_Fn02 | 0x03 | Read Holding Registers | MTCP_ETN_Fn03 | 0x04 | Read Input Registers | MTCP_ETN_Fn04 | 0x05 | Write Single Coil | MTCP_ETN_Fn05 | 0x06 | Write Single Register | MTCP_ETN_Fn06 | 0x0F | Write Multiple Coils | MTCP_ETN_Fn0F | 0x10 | Write Multiple Registers | MTCP_ETN_Fn10 | 0x17 | Read Write Multiple Registers | MTCP_Client_Fn17 | Type | adresse | Descriptions | émission | D32500-D32506 | Zone de consignation de la requête | réception | D32510-D32642 | Zone de réception de la réponse | Type | adresse | Descriptions | Drapeau/commande | CIO1500- CIO1524 | Pour plus de détails : | Paramètres | D 30000 - D30099 | <a href="#">Socket Service de W421</a> |
| Code                     | Fonction Modbus   | Bloc fonction                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x01                     | Read coils  | MTCP_ETN_Fn01                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x02                     | Read Input Status   | MTCP_ETN_Fn02                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x03                     | Read Holding Registers  | MTCP_ETN_Fn03                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x04                     | Read Input Registers  | MTCP_ETN_Fn04                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x05                     | Write Single Coil   | MTCP_ETN_Fn05                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x06                     | Write Single Register   | MTCP_ETN_Fn06                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x0F                     | Write Multiple Coils  | MTCP_ETN_Fn0F                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x10                     | Write Multiple Registers  | MTCP_ETN_Fn10                          |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| 0x17                     | Read Write Multiple Registers   | MTCP_Client_Fn17                       |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| Type                     | adresse   | Descriptions                           |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| émission                 | D32500-D32506   | Zone de consignation de la requête     |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| réception                | D32510-D32642   | Zone de réception de la réponse        |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| Type                     | adresse   | Descriptions                           |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| Drapeau/commande         | CIO1500- CIO1524  | Pour plus de détails :                 |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |
| Paramètres               | D 30000 - D30099  | <a href="#">Socket Service de W421</a> |                 |               |      |            |               |      |                   |               |      |                        |               |      |                      |               |      |                   |               |      |                       |               |      |                      |               |      |                          |               |      |                               |                  |      |         |              |          |               |                                    |           |               |                                 |      |         |              |                  |                  |                        |            |                  |  |

## 1- Variable d'E/S du bloc fonction MTCP\_ETN\_Connect

## Variables d'entrée

| Nom         | type | valeur  | Description                           |
|-------------|------|---------|---------------------------------------|
| EN          | Bool | OFF, ON | Activation du FB                      |
| IP_Address1 | UINT | 00 - FF | Adresse IP du serveur (octet 1,2,3,4) |
| IP_Address2 |      |         |                                       |
| IP_Address3 |      |         |                                       |
| IP_Address4 |      |         |                                       |
| Connect     | Bool | OFF, ON | Demande de connexion au serveur       |

## Variables de sortie

| Nom            | type | valeur   | Description   |
|----------------|------|----------|---|
| ENO            | Bool | OFF, ON  | ON : Connecté au serveur  |
| Error          | Bool | OFF, ON  | Drapeau d'erreur  |
| Error_Code     | UINT | 0 - FFFF | Code erreur renvoyé par la fonction socket ou bien par le serveur Modbus TCP (voir tableau plus bas). |
| Waiting_Server | Bool | OFF-ON   | ON : en attente de synchronisation du serveur   |

## 2- Variable d'Entrée des FB MTCP\_ETN\_Fn01, Fn03, Fn05, Fn06, Fn0F, Fn10 et Fn17

| MTCP_ETN_Fn01<br>MTCP_ETN_Fn02 | type | valeur   | Description                                 |
|--------------------------------|------|----------|---|
| EN                             | Bool | OFF, ON  | Activation du FB (sortie ENO du FB Connect) |
| Coil_Address                   | UINT | 0 - FFFF | Adresse de la 1 <sup>ère</sup> bobine       |
| Coil_Qty                       | UINT | 0 - 00FF | Nombre de bobines                           |
| RespData_DM                    | UINT | 0 - FFFF | Destination des données (mémoire DM)        |
| Cmd_Read                       | Bool | OFF, ON  | Commande de lecture                         |
| SlaveID                        | Word | 1 - 255  | N° d'esclave (0 = FF par défaut)            |

| MTCP_ETN_Fn03<br>MTCP_ETN_Fn04 | type | valeur   | Description                                 |
|--------------------------------|------|----------|---|
| EN                             | Bool | OFF, ON  | Activation du FB (sortie ENO du FB Connect) |
| Register_Address               | UINT | 0 - FFFF | Adresse du 1 <sup>er</sup> registre         |
| Register_Qty                   | UINT | 0 - 00FF | Nombre de registres                         |
| RespData_DM                    | UINT | 0 - FFFF | Destination des données (mémoire DM)        |
| Cmd_Read                       | Bool | OFF, ON  | Commande de lecture                         |
| SlaveID                        | Word | 1 - 255  | N° d'esclave (0 = FF par défaut)            |

| MTCP_ETN_Fn05 | type | valeur   | Description                                 |
|---------------|------|----------|---|
| EN            | Bool | OFF, ON  | Activation du FB (sortie ENO du FB Connect) |
| Coil_Address  | UINT | 0 - FFFF | Adresse de la bobine                        |
| Value         | Bool | OFF, ON  | Valeur ON/OFF à écrire                      |
| Cmd_Write     | Bool | OFF, ON  | Commande d'écriture                         |
| SlaveID       | Word | 1 - 255  | N° d'esclave (0 = FF par défaut)            |

| MTCP_ETN_Fn06    | type | valeur   | Description                                 |
|------------------|------|----------|---|
| EN               | Bool | OFF, ON  | Activation du FB (sortie ENO du FB Connect) |
| Register_Address | UINT | 0 - FFFF | Adresse du registre                         |
| Value            | UINT | 0 - FFFF | Valeur à écrire dans le registre            |
| Cmd_Write        | Bool | OFF, ON  | Commande d'écriture                         |
| SlaveID          | Word | 1 - 255  | N° d'esclave (0 = FF par défaut)            |

| MTCP_ETN_Fn0F  | type | valeur    | Description                                 |
|----------------|------|-----------|---|
| EN             | Bool | OFF, ON   | Activation du FB (sortie ENO du FB Connect) |
| Coil_Address   | UINT | 0 - FFFF  | Adresse de la 1 <sup>ère</sup> bobine       |
| Coil_Qty       | UINT | 0 - 00FF  | Nombre de bobine à écrire                   |
| DataAddress_DM | UINT | 0 - FFFF□ | Source des données (mémoire DM)             |
| Cmd_Write      | Bool | OFF, ON   | Commande de lecture                         |
| SlaveID        | Word | 1 - 255   | N° d'esclave (0 = FF par défaut)            |

| MTCP_ETN_Fn10    | type | valeur   | Description                                 |
|------------------|------|----------|---|
| EN               | Bool | OFF, ON  | Activation du FB (sortie ENO du FB Connect) |
| Register_Address | UINT | 0 - FFFF | Adresse du 1 <sup>ère</sup> registre        |
| Register_Qty     | UINT | 0 - 00FF | Nombre de registre                          |
| DataAddress_DM   | UINT | 0 - FFFF | Source des données (mémoire DM)             |
| Cmd_Write        | Bool | OFF, ON  | Commande d'écriture                         |
| SlaveID          | Word | 1 - 255  | N° d'esclave (0 = FF par défaut)            |

| MTCP_CP1L_Fn17    | type | range    | Description                                 |
|-------------------|------|----------|---|
| EN                | Bool | OFF, ON  | FB Activation (use ENO of FB Connect)       |
| UNIT_ID           | UINT | 00 - FF  | Unit Identifier (0 = default value -> &255) |
| Timeout           | UINT | 0 - FFFF | Timeout in 0.1s (0 : default value = 100ms) |
| Reg_Address_Read  | UINT | 0 - FFFF | Address of 1rst register                    |
| Reg_Qty_Read      | UINT | 0 - 00FF | Number of registers                         |
| RespData_DM       | UINT | 0 - FFFF | Destination of data (DM area)               |
| Reg_Address_Write | UINT | 0 - FFFF | Address of 1rst register                    |
| Reg_Qty_Write     | UINT | 0 - 00FF | Number of registers                         |
| Data_Adress_DM    | UINT | 0 - FFFF | Source of data (DM area)                    |
| Cmd_Send          | Bool | OFF, ON  | Send the ReadWrite Command                  |

### 3- Variables de sorties des FB MTCP\_ETN\_Fn01, Fn03, Fn05, Fn06, Fn0F, Fn10 et Fn17

| Name        | type | valeur   | Description   |
|-------------|------|----------|---|
| ENO         | Bool | OFF, ON  | ON : Connecté au serveur  |
| Rcv_Counter | UINT | 0 - FFFF | Compteur de reception de réponses   |
| Error       | Bool | OFF, ON  | Drapeau d'erreur d'exécution  |
| Error_Code  | UINT | 0 - FFFF | Code erreur renvoyé par la fonction socket TCP Open Active ou bien par le serveur Modbus TCP (voir tableau ci-après). |

Code erreur renvoyé par le serveur Modbus TCP (Modbus exception response)

| Code | Description          |
|------|----------------------|
| 0001 | ILLEGAL FUNCTION     |
| 0002 | ILLEGAL DATA ADDRESS |
| 0003 | ILLEGAL DATA VALUE   |

Code erreur renvoyé par le service Socket TCP Open Active, Send et Receive

|      |   |
|------|---|
| 2607 | Socket already in use   |
| 0302 | CPU Unit error: cannot execute  |
| 1100 | Number bytes to send/receive not in allowed range                               |
| 1101 | The area designation of the Send/Receive Data address is not in allowable range |
| 1103 | The bit number in the Send/Receive data address is not in allowable range       |
| 110C | Request switch turned ON during other processing                                |
| 220F | Specified socket is already processing a SEND request                           |
| 2210 | The specified socket is not connected   |
| 2211 | Unit is busy: cannot execute  |
| 2606 | Specified socket is already open as UDP socket                                  |
| 2607 | Specified socket service parameter area is already being used by another socket |
| 0020 | Connection with remote socket broken during Send (EPIPE)                        |
| 003E | Internal buffer cannot be obtained due to high reception traffic                |
| 0045 | Error in communication with remote node   |
| 004B | Error communication with remote node (again)                                    |
| 004E | Remote IP address parameter error (ET unreach)                                  |
| 0051 | Remote IP address parameter error (Host unreach)                                |
| 0053 | Error communication with remote HOST  |
| 0080 | Receive request Timed out   |
| 0081 | Specified socket was closed during receive processing                           |

## Rappel sur le format du protocole Modbus

### Lecture de plusieurs bobines (CIO)

Exemple: lecture de 19 bits (CIO 0001.04 à 0002.06)

| Requête                 |             | Réponse       |        |
|-------------------------|-------------|---------------|--------|
|                         | Donnée      |               | Donnée |
| Code Fonction           | 0x01        | Code Fonction | 0x01   |
| Adresss (poids fort)    | 0x00        | Nbre d'octets | 0x03   |
| Adresse (poids faible)  | <b>0x14</b> | Bobines 27-20 | 0xCD   |
| Quantité (poids fort)   | 0x00        | Bobines 35-28 | 0x6B   |
| Quantité (poids faible) | 0x13        | Bobines 38-36 | 0x05   |

|     | 15              | 14              | 13              | 12              | 11              | 10              | 9               | 8               | 7               | 6               | 5               | 4               | 3               | 2               | 1               | 0               |
|-----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0CH | 15              | 14              | 13              | 12              | 11              | 10              | 9               | 8               | 7               | 6               | 5               | 4               | 3               | 2               | 1               | 0               |
| 1CH | 31 <sub>1</sub> | 30 <sub>0</sub> | 29 <sub>1</sub> | 28 <sub>1</sub> | 27 <sub>1</sub> | 26 <sub>1</sub> | 25 <sub>0</sub> | 24 <sub>0</sub> | 23 <sub>1</sub> | 22 <sub>1</sub> | 21 <sub>0</sub> | 20 <sub>1</sub> | 19              | 18              | 17              | 16              |
| 2CH | 47              | 46              | 45              | 44              | 43              | 42              | 41              | 40              | 39              | 38 <sub>1</sub> | 37 <sub>0</sub> | 36 <sub>1</sub> | 35 <sub>0</sub> | 34 <sub>1</sub> | 33 <sub>1</sub> | 32 <sub>0</sub> |
| 3CH | 63              | 62              | 61              | 60              | 59              | 58              | 57              | 56              | 55              | 54              | 53              | 52              | 51              | 50              | 49              | 48              |

Les caractères en italique montre la valeur ON/OFF(1/0) du bit.

### Lecture de plusieurs registres (DM)

Exemple: lecture de 3 registres (DM 1000 à DM 1002)

| Requête                 |        | Réponse                        |        |
|-------------------------|--------|--------------------------------|--------|
|                         | Donnée |                                | Donnée |
| Code Fonction           | 0x03   | Code Fonction                  | 0x03   |
| Adresse (poids fort)    | 0x03   | Nbre d'octets                  | 0x06   |
| Adresse (poids faible)  | 0xE8   | Registre DM1000 (poids fort)   | 0xAB   |
| Quantité (poids fort)   | 0x00   | Registre DM1000 (poids faible) | 0x12   |
| Quantité (poids faible) | 0x03   | Registre DM1001 (poids fort)   | 0x56   |
|                         |        | Registre DM1001 (poids faible) | 0x78   |
|                         |        | Registre DM1002 (poids fort)   | 0x97   |
|                         |        | Registre DM1002 (poids faible) | 0x13   |

| DM   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|------|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|
| 1000 | A  |    |    |    | B  |    |   |   | 1 |   |   |   | 2 |   |   |   |
| 1001 | 5  |    |    |    | 6  |    |   |   | 7 |   |   |   | 8 |   |   |   |
| 1002 | 9  |    |    |    | 7  |    |   |   | 1 |   |   |   | 3 |   |   |   |

### Ecriture d'une bobine (CIO)

Exemple: écriture d'un bit (CIO 0002.02 ON)

| Requête                |        | Réponse                |        |
|------------------------|--------|------------------------|--------|
|                        | Donnée | Identique à la requête | Donnée |
| Code Fonction          | 0x05   | Code Fonction          | 0x05   |
| Adresss (poids fort)   | 0x00   | Adresss (poids fort)   | 0x00   |
| Adresse (poids faible) | 0x22   | Adresse (poids faible) | 0x22   |
| Valeur (poids fort)    | 0xFF   | Valeur (poids fort)    | 0xFF   |
| Valeur (poids faible)  | 0x00   | Valeur (poids faible)  | 0x00   |

|     | 15              | 14              | 13              | 12              | 11              | 10              | 9               | 8               | 7               | 6               | 5               | 4               | 3               | 2               | 1               | 0               |
|-----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0CH | 15              | 14              | 13              | 12              | 11              | 10              | 9               | 8               | 7               | 6               | 5               | 4               | 3               | 2               | 1               | 0               |
| 1CH | 31 <sub>1</sub> | 30 <sub>0</sub> | 29 <sub>1</sub> | 28 <sub>1</sub> | 27 <sub>1</sub> | 26 <sub>1</sub> | 25 <sub>0</sub> | 24 <sub>0</sub> | 23 <sub>1</sub> | 22 <sub>1</sub> | 21 <sub>0</sub> | 20 <sub>1</sub> | 19              | 18              | 17              | 16              |
| 2CH | 47              | 46              | 45              | 44              | 43              | 42              | 41              | 40              | 39              | 38 <sub>1</sub> | 37 <sub>0</sub> | 36 <sub>1</sub> | 35 <sub>0</sub> | 34 <sub>1</sub> | 33 <sub>1</sub> | 32 <sub>0</sub> |
| 3CH | 63              | 62              | 61              | 60              | 59              | 58              | 57              | 56              | 55              | 54              | 53              | 52              | 51              | 50              | 49              | 48              |

Les caractères en italique montre la valeur ON/OFF(1/0) du bit.

**Ecriture d'un registre (DM)**

Exemple: écriture de &h3AC5 dans le DM 2000.

| Requête                |        | Réponse                |        |
|------------------------|--------|------------------------|--------|
|                        | Donnée | Identique à la requête | Donnée |
| Code Fonction          | 0x06   | Code Fonction          | 0x06   |
| Adresse (poids fort)   | 0x07   | Adresse (poids fort)   | 0x07   |
| Adresse (poids faible) | 0xD0   | Adresse (poids faible) | 0xD0   |
| Valeur (poids fort)    | 0x3A   | Valeur (poids fort)    | 0x3A   |
| Valeur (poids faible)  | 0xC5   | Valeur (poids faible)  | 0xC5   |

|      |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |   |
|------|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|
| DM   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 2000 | 3  |    |    |    | A  |    |   |   | C |   |   |   | 5 |   |   |   |
| 2001 |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |   |
| 2002 |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |   |

**Ecriture de plusieurs registres**

Exemple: écriture de 2 mots DM1000-1001.

| Requête                          |        | Réponse                          |        |
|----------------------------------|--------|----------------------------------|--------|
|                                  | Donnée |                                  | Donnée |
| Code Fonction                    | 0x10   | Code Fonction                    | 0x10   |
| Adresse (poids fort)             | 0x03   | Adresse (poids fort)             | 0x03   |
| Adresse (poids faible)           | 0xE8   | Adresse (poids faible)           | 0xE8   |
| Nbre de registres (poids fort)   | 0x00   | Nbre de registres (poids fort)   | 0x00   |
| Nbre de registres (poids faible) | 0x02   | Nbre de registres (poids faible) | 0x02   |
| Nombre d'octet de données        | 0x04   |                                  |        |
| 1ère valeur (poids fort)         | 0x3A   |                                  |        |
| 1ère valeur (poids faible)       | 0xC5   |                                  |        |
| 2ème valeur (poids fort)         | 0x97   |                                  |        |
| 2ème valeur (poids faible)       | 0x13   |                                  |        |

|      |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |   |
|------|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|
| DM   | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 1000 | 3  |    |    |    | A  |    |   |   | C |   |   |   | 5 |   |   |   |
| 1001 | 9  |    |    |    | 7  |    |   |   | 1 |   |   |   | 3 |   |   |   |

**Ecriture de plusieurs bobines**

Exemple : écriture de 10 bits ( xxxx xx11 1100 1101) to CIO 0001.04.(X = ignoré.)

| Requête                        |        | Réponse                        |        |
|--------------------------------|--------|--------------------------------|--------|
|                                | Donnée |                                | Donnée |
| Code Fonction                  | 0x0F   | Code Fonction                  | 0x0F   |
| Adresse (poids fort)           | 0x00   | Adresse (poids fort)           | 0x00   |
| Adresse (poids faible)         | 0x13   | Adresse (poids faible)         | 0x13   |
| Nbre de bobines (poids fort)   | 0x00   | Nbre de bobines (poids fort)   | 0x00   |
| Nbre de bobines (poids faible) | 0x0A   | Nbre de bobines (poids faible) | 0x0A   |
| Nombre d'octet de données      | 0x02   |                                |        |
| 1ère valeur (poids fort)       | 0x3A   |                                |        |
| 2ème valeur (poids fort)       | 0x01   |                                |        |

|     |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
|-----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|     | 15              | 14              | 13              | 12              | 11              | 10              | 9               | 8               | 7               | 6               | 5               | 4               | 3               | 2               | 1               | 0               |
| 0CH | 15              | 14              | 13              | 12              | 11              | 10              | 9               | 8               | 7               | 6               | 5               | 4               | 3               | 2               | 1               | 0               |
| 1CH | 31 <sub>0</sub> | 30 <sub>0</sub> | 29 <sub>0</sub> | 28 <sub>1</sub> | 27 <sub>0</sub> | 26 <sub>0</sub> | 25 <sub>1</sub> | 24 <sub>1</sub> | 23 <sub>1</sub> | 22 <sub>0</sub> | 21 <sub>1</sub> | 20 <sub>0</sub> | 19 <sub>0</sub> | 18 <sub>0</sub> | 17 <sub>0</sub> | 16 <sub>0</sub> |

## Read and Write multiple registers Fn17

Example: read registers 1 & 2 (1001-2002) and write CAFE into register 0003.

| Requête                          |        | Réponse                             |        |
|----------------------------------|--------|-------------------------------------|--------|
|                                  | Donnée |                                     | Donnée |
| Function Code                    | 0x17   | Function Code                       | 0x17   |
| Starting Address(H) to read      | 0x00   | Nbre of byte                        | 0x04   |
| Starting Address(L) to read      | 0x01   | Valeur du registre 1 (poids faible) | 0x10   |
| Quantity of Registers(H) to read | 0x00   | Valeur du registre 1 (poids fort)   | 0x01   |
| Quantity of Registers(L) to read | 0x02   | Valeur du registre 2 (poids faible) | 0x20   |
| Starting Address(H) to write     | 0x00   | Valeur du registre 2 (poids fort)   | 0x02   |
| Starting Address(L) to write     | 0x03   |                                     |        |
| Nbre of registers (H) to write   | 0x00   |                                     |        |
| Nbre of registers (L) to write   | 0x01   |                                     |        |
| Nbre of bytes/octets à écrire    | 0x02   |                                     |        |
| 1ère valeur (poids fort)         | 0xCA   |                                     |        |
| 1ère valeur (poids faible)       | 0xFE   |                                     |        |

|      | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|------|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|
| 0000 |    |    | 3  |    |    |    | A |   |   |   | C |   |   |   | 5 |   |
| 0001 |    |    | 1  |    |    |    | 0 |   |   |   | 0 |   |   |   | 1 |   |
| 0002 |    |    | 2  |    |    |    | 0 |   |   |   | 0 |   |   |   | 2 |   |
| 0003 |    |    | C  |    |    |    | A |   |   |   | F |   |   |   | E |   |