

Manual EMU Professional II Modbus

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General

This document is a follow up for the EMU Professional II documentation (Doc.Ref 1451).

All registers available for Modbus read-out are listed in this document. The registers are read-only. The function code is <<Read Holding Registers - 03>>. In case you are integrating the EMU Professional II into an existing EMU Professional / Allrounder Modbus installation you can find the old register no. in the chapter "With EMU Professional Compatible Read-Out"

You can find a few examples of Modbus read-out with modpoll at the end of this document.



Note: This document assumes 1 as the starting point for the registers. Depending on the Modbus client used, an addition of -1 to the register no. might be needed.

Data Types

The data type used for register read-out is unsigned integer (uInt). These values are unsigned with a codomain of 0 to 4'294'967'296 (32bit, uInt32) or 18'446'744'073'709'551'616 (64bit, uInt64) respectively.

For the momentary value read-out signed floats (sFloat, sFloat32) or signed integers with a codomain of -2'147'483'648 to 2'147'483'647 (32bit, sInt32) are used, as momentary values may be negative and in case of floats may possess one or more decimal places.

Read-Out of Meter Information

| Description | Register | No. of Register | Data Type |
|---------------------|----------|-----------------|-----------|
| Serial No. | 5000 | 2 | uInt32 |
| Factory No. | 5002 | 2 | uInt32 |
| Current System-time | 5026 | 4 | uInt64 |

Read-Out of Data logger

The data logger saves energy and power values at the end of the load profile interval.

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|--------------------------------|---------|------------|----------|-----------------|-----------|
| Time Stamp of Entry | Epoch | Seconds | 5900 | 2 | uInt32 |
| Active Energy Import L123 T1 | Wh | 1 Wh | 5902 | 4 | uInt64 |
| Active Energy Import L123 T2 | Wh | 1 Wh | 5906 | 4 | uInt64 |
| Active Energy Export L123 T1 | Wh | 1 Wh | 5910 | 4 | uInt64 |
| Active Energy Export L123 T2 | Wh | 1 Wh | 5914 | 4 | uInt64 |
| Reactive Energy Import L123 T1 | varh | 1 varh | 5918 | 4 | uInt64 |
| Reactive Energy Import L123 T2 | varh | 1 varh | 5922 | 4 | uInt64 |
| Reactive Energy Export L123 T1 | varh | 1 varh | 5926 | 4 | uInt64 |
| Reactive Energy Export L123 T2 | varh | 1 varh | 5930 | 4 | uInt64 |
| Active Power L123 | W | 1 W | 5934 | 2 | sFloat32 |
| Active Power L1 | W | 1 W | 5936 | 2 | sFloat32 |
| Active Power L2 | W | 1 W | 5938 | 2 | sFloat32 |
| Active Power L3 | W | 1 W | 5940 | 2 | sFloat32 |
| Current L123 | mA | 1 mA | 5942 | 2 | sFloat32 |
| Current L1 | mA | 1 mA | 5944 | 2 | sFloat32 |
| Current L2 | mA | 1 mA | 5946 | 2 | sFloat32 |
| Current L3 | mA | 1 mA | 5948 | 2 | sFloat32 |
| Current L4 | mA | 1 mA | 5950 | 2 | sFloat32 |
| Voltage L1-N | mV | 100mV | 5952 | 2 | sFloat32 |
| Voltage L2-N | mV | 100 mV | 5954 | 2 | sFloat32 |
| Voltage L3-N | mV | 100mV | 5956 | 2 | sFloat32 |
| Power Factor L1 | -1 .. 1 | 0.01 | 5958 | 2 | sFloat32 |
| Power Factor L2 | -1 .. 1 | 0.01 | 5960 | 2 | sFloat32 |
| Power Factor L3 | -1 .. 1 | 0.01 | 5962 | 2 | sFloat32 |
| Frequency | Hz | 0.1 Hz | 5964 | 2 | sFloat32 |

Register Read-Out Professional II

Energy Register 64bit, Wh Resolution

Active Energy

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|---------------------------------|------|------------|----------|-----------------|-----------|
| Phase L123 | | | | | |
| Active Energy Import L123 Total | Wh | 1 Wh | 6000 | 4 | uint64 |
| Active Energy Import L123 T1 | Wh | 1 Wh | 6004 | 4 | uint64 |
| Active Energy Import L123 T2 | Wh | 1 Wh | 6008 | 4 | uint64 |
| Active Energy Import L123 T3 | Wh | 1 Wh | 6012 | 4 | uint64 |
| Active Energy Import L123 T4 | Wh | 1 Wh | 6016 | 4 | uint64 |
| Active Energy Export L123 Total | Wh | 1 Wh | 6020 | 4 | uint64 |
| Active Energy Export L123 T1 | Wh | 1 Wh | 6024 | 4 | uint64 |
| Active Energy Export L123 T2 | Wh | 1 Wh | 6028 | 4 | uint64 |
| Active Energy Export L123 T3 | Wh | 1 Wh | 6032 | 4 | uint64 |
| Active Energy Export L123 T4 | Wh | 1 Wh | 6036 | 4 | uint64 |
| Phase L1 | | | | | |
| Active Energy Import L1 Total | Wh | 1 Wh | 6100 | 4 | uint64 |
| Active Energy Import L1 T1 | Wh | 1 Wh | 6104 | 4 | uint64 |
| Active Energy Import L1 T2 | Wh | 1 Wh | 6108 | 4 | uint64 |
| Active Energy Import L1 T3 | Wh | 1 Wh | 6112 | 4 | uint64 |
| Active Energy Import L1 T4 | Wh | 1 Wh | 6116 | 4 | uint64 |
| Active Energy Export L1 Total | Wh | 1 Wh | 6120 | 4 | uint64 |
| Active Energy Export L1 T1 | Wh | 1 Wh | 6124 | 4 | uint64 |
| Active Energy Export L1 T2 | Wh | 1 Wh | 6128 | 4 | uint64 |
| Active Energy Export L1 T3 | Wh | 1 Wh | 6132 | 4 | uint64 |
| Active Energy Export L1 T4 | Wh | 1 Wh | 6136 | 4 | uint64 |
| Phase L2 | | | | | |
| Active Energy Import L2 Total | Wh | 1 Wh | 6140 | 4 | uint64 |
| Active Energy Import L2 T1 | Wh | 1 Wh | 6144 | 4 | uint64 |
| Active Energy Import L2 T2 | Wh | 1 Wh | 6148 | 4 | uint64 |
| Active Energy Import L2 T3 | Wh | 1 Wh | 6152 | 4 | uint64 |
| Active Energy Import L2 T4 | Wh | 1 Wh | 6156 | 4 | uint64 |
| Active Energy Export L2 Total | Wh | 1 Wh | 6160 | 4 | uint64 |
| Active Energy Export L2 T1 | Wh | 1 Wh | 6164 | 4 | uint64 |
| Active Energy Export L2 T2 | Wh | 1 Wh | 6168 | 4 | uint64 |
| Active Energy Export L2 T3 | Wh | 1 Wh | 6172 | 4 | uint64 |
| Active Energy Export L2 T4 | Wh | 1 Wh | 6176 | 4 | uint64 |
| Phase L3 | | | | | |
| Active Energy Import L3 Total | Wh | 1 Wh | 6180 | 4 | uint64 |
| Active Energy Import L3 T1 | Wh | 1 Wh | 6184 | 4 | uint64 |
| Active Energy Import L3 T2 | Wh | 1 Wh | 6188 | 4 | uint64 |
| Active Energy Import L3 T3 | Wh | 1 Wh | 6192 | 4 | uint64 |
| Active Energy Import L3 T4 | Wh | 1 Wh | 6196 | 4 | uint64 |
| Active Energy Export L3 Total | Wh | 1 Wh | 6200 | 4 | uint64 |
| Active Energy Export L3 T1 | Wh | 1 Wh | 6204 | 4 | uint64 |
| Active Energy Export L3 T2 | Wh | 1 Wh | 6208 | 4 | uint64 |
| Active Energy Export L3 T3 | Wh | 1 Wh | 6212 | 4 | uint64 |
| Active Energy Export L3 T4 | Wh | 1 Wh | 6216 | 4 | uint64 |

Reactive Energy

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|-----------------------------------|------|------------|----------|-----------------|-----------|
| Phase L123 | | | | | |
| Reactive Energy Import L123 Total | varh | 1 varh | 6300 | 4 | ulnt64 |
| Reactive Energy Import L123 T1 | varh | 1 varh | 6304 | 4 | ulnt64 |
| Reactive Energy Import L123 T2 | varh | 1 varh | 6308 | 4 | ulnt64 |
| Reactive Energy Import L123 T3 | varh | 1 varh | 6312 | 4 | ulnt64 |
| Reactive Energy Import L123 T4 | varh | 1 varh | 6316 | 4 | ulnt64 |
| Reactive Energy Export L123 Total | varh | 1 varh | 6320 | 4 | ulnt64 |
| Reactive Energy Export L123 T1 | varh | 1 varh | 6324 | 4 | ulnt64 |
| Reactive Energy Export L123 T2 | varh | 1 varh | 6328 | 4 | ulnt64 |
| Reactive Energy Export L123 T3 | varh | 1 varh | 6332 | 4 | ulnt64 |
| Reactive Energy Export L123 T4 | varh | 1 varh | 6336 | 4 | ulnt64 |
| Phase L1 | | | | | |
| Reactive Energy Import L1 Total | varh | 1 varh | 6400 | 4 | ulnt64 |
| Reactive Energy Import L1 T1 | varh | 1 varh | 6404 | 4 | ulnt64 |
| Reactive Energy Import L1 T2 | varh | 1 varh | 6408 | 4 | ulnt64 |
| Reactive Energy Import L1 T3 | varh | 1 varh | 6412 | 4 | ulnt64 |
| Reactive Energy Import L1 T4 | varh | 1 varh | 6416 | 4 | ulnt64 |
| Reactive Energy Export L1 Total | varh | 1 varh | 6420 | 4 | ulnt64 |
| Reactive Energy Export L1 T1 | varh | 1 varh | 6424 | 4 | ulnt64 |
| Reactive Energy Export L1 T2 | varh | 1 varh | 6428 | 4 | ulnt64 |
| Reactive Energy Export L1 T3 | varh | 1 varh | 6432 | 4 | ulnt64 |
| Reactive Energy Export L1 T4 | varh | 1 varh | 6436 | 4 | ulnt64 |
| Phase L2 | | | | | |
| Reactive Energy Import L2 Total | varh | 1 varh | 6440 | 4 | ulnt64 |
| Reactive Energy Import L2 T1 | varh | 1 varh | 6444 | 4 | ulnt64 |
| Reactive Energy Import L2 T2 | varh | 1 varh | 6448 | 4 | ulnt64 |
| Reactive Energy Import L2 T3 | varh | 1 varh | 6452 | 4 | ulnt64 |
| Reactive Energy Import L2 T4 | varh | 1 varh | 6456 | 4 | ulnt64 |
| Reactive Energy Export L2 Total | varh | 1 varh | 6460 | 4 | ulnt64 |
| Reactive Energy Export L2 T1 | varh | 1 varh | 6464 | 4 | ulnt64 |
| Reactive Energy Export L2 T2 | varh | 1 varh | 6468 | 4 | ulnt64 |
| Reactive Energy Export L2 T3 | varh | 1 varh | 6472 | 4 | ulnt64 |
| Reactive Energy Export L2 T4 | varh | 1 varh | 6476 | 4 | ulnt64 |
| Phase L3 | | | | | |
| Reactive Energy Import L3 Total | varh | 1 varh | 6480 | 4 | ulnt64 |
| Reactive Energy Import L3 T1 | varh | 1 varh | 6484 | 4 | ulnt64 |
| Reactive Energy Import L3 T2 | varh | 1 varh | 6488 | 4 | ulnt64 |
| Reactive Energy Import L3 T3 | varh | 1 varh | 6492 | 4 | ulnt64 |
| Reactive Energy Import L3 T4 | varh | 1 varh | 6496 | 4 | ulnt64 |
| Reactive Energy Export L3 Total | varh | 1 varh | 6500 | 4 | ulnt64 |
| Reactive Energy Export L3 T1 | varh | 1 varh | 6504 | 4 | ulnt64 |
| Reactive Energy Export L3 T2 | varh | 1 varh | 6508 | 4 | ulnt64 |
| Reactive Energy Export L3 T3 | varh | 1 varh | 6512 | 4 | ulnt64 |
| Reactive Energy Export L3 T4 | varh | 1 varh | 6516 | 4 | ulnt64 |

Energy Register 64bit, kWh Resolution

Active Energy

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|---------------------------------|------|------------|----------|-----------------|-----------|
| Phase L123 | | | | | |
| Active Energy Import L123 Total | kWh | 1 kWh | 7000 | 4 | uInt64 |
| Active Energy Import L123 T1 | kWh | 1 kWh | 7004 | 4 | uInt64 |
| Active Energy Import L123 T2 | kWh | 1 kWh | 7008 | 4 | uInt64 |
| Active Energy Import L123 T3 | kWh | 1 kWh | 7012 | 4 | uInt64 |
| Active Energy Import L123 T4 | kWh | 1 kWh | 7016 | 4 | uInt64 |
| Active Energy Export L123 Total | kWh | 1 kWh | 7020 | 4 | uInt64 |
| Active Energy Export L123 T1 | kWh | 1 kWh | 7024 | 4 | uInt64 |
| Active Energy Export L123 T2 | kWh | 1 kWh | 7028 | 4 | uInt64 |
| Active Energy Export L123 T3 | kWh | 1 kWh | 7032 | 4 | uInt64 |
| Active Energy Export L123 T4 | kWh | 1 kWh | 7036 | 4 | uInt64 |
| Phase L1 | | | | | |
| Active Energy Import L1 Total | kWh | 1 kWh | 7100 | 4 | uInt64 |
| Active Energy Import L1 T1 | kWh | 1 kWh | 7104 | 4 | uInt64 |
| Active Energy Import L1 T2 | kWh | 1 kWh | 7108 | 4 | uInt64 |
| Active Energy Import L1 T3 | kWh | 1 kWh | 7112 | 4 | uInt64 |
| Active Energy Import L1 T4 | kWh | 1 kWh | 7116 | 4 | uInt64 |
| Active Energy Export L1 Total | kWh | 1 kWh | 7120 | 4 | uInt64 |
| Active Energy Export L1 T1 | kWh | 1 kWh | 7124 | 4 | uInt64 |
| Active Energy Export L1 T2 | kWh | 1 kWh | 7128 | 4 | uInt64 |
| Active Energy Export L1 T3 | kWh | 1 kWh | 7132 | 4 | uInt64 |
| Active Energy Export L1 T4 | kWh | 1 kWh | 7136 | 4 | uInt64 |
| Phase L2 | | | | | |
| Active Energy Import L2 Total | kWh | 1 kWh | 7140 | 4 | uInt64 |
| Active Energy Import L2 T1 | kWh | 1 kWh | 7144 | 4 | uInt64 |
| Active Energy Import L2 T3 | kWh | 1 kWh | 7152 | 4 | uInt64 |
| Active Energy Import L2 T2 | kWh | 1 kWh | 7148 | 4 | uInt64 |
| Active Energy Import L2 T4 | kWh | 1 kWh | 7156 | 4 | uInt64 |
| Active Energy Export L2 Total | kWh | 1 kWh | 7160 | 4 | uInt64 |
| Active Energy Export L2 T1 | kWh | 1 kWh | 7164 | 4 | uInt64 |
| Active Energy Export L2 T2 | kWh | 1 kWh | 7168 | 4 | uInt64 |
| Active Energy Export L2 T3 | kWh | 1 kWh | 7172 | 4 | uInt64 |
| Active Energy Export L2 T4 | kWh | 1 kWh | 7176 | 4 | uInt64 |
| Phase L3 | | | | | |
| Active Energy Import L3 Total | kWh | 1 kWh | 7180 | 4 | uInt64 |
| Active Energy Import L3 T1 | kWh | 1 kWh | 7184 | 4 | uInt64 |
| Active Energy Import L3 T2 | kWh | 1 kWh | 7188 | 4 | uInt64 |
| Active Energy Import L3 T3 | kWh | 1 kWh | 7192 | 4 | uInt64 |
| Active Energy Import L3 T4 | kWh | 1 kWh | 7196 | 4 | uInt64 |
| Active Energy Export L3 Total | kWh | 1 kWh | 7200 | 4 | uInt64 |
| Active Energy Export L3 T1 | kWh | 1 kWh | 7204 | 4 | uInt64 |
| Active Energy Export L3 T2 | kWh | 1 kWh | 7208 | 4 | uInt64 |
| Active Energy Export L3 T3 | kWh | 1 kWh | 7212 | 4 | uInt64 |
| Active Energy Export L3 T4 | kWh | 1 kWh | 7216 | 4 | uInt64 |

Reactive Energy

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|-----------------------------------|-------|------------|----------|-----------------|-----------|
| Phase L123 | | | | | |
| Reactive Energy Import L123 Total | kvarh | 1 kvarh | 7300 | 4 | uInt64 |
| Reactive Energy Import L123 T1 | kvarh | 1 kvarh | 7304 | 4 | uInt64 |
| Reactive Energy Import L123 T2 | kvarh | 1 kvarh | 7308 | 4 | uInt64 |
| Reactive Energy Import L123 T3 | kvarh | 1 kvarh | 7312 | 4 | uInt64 |
| Reactive Energy Import L123 T4 | kvarh | 1 kvarh | 7316 | 4 | uInt64 |
| Reactive Energy Export L123 Total | kvarh | 1 kvarh | 7320 | 4 | uInt64 |
| Reactive Energy Export L123 T1 | kvarh | 1 kvarh | 7324 | 4 | uInt64 |
| Reactive Energy Export L123 T2 | kvarh | 1 kvarh | 7328 | 4 | uInt64 |
| Reactive Energy Export L123 T3 | kvarh | 1 kvarh | 7332 | 4 | uInt64 |
| Reactive Energy Export L123 T4 | kvarh | 1 kvarh | 7336 | 4 | uInt64 |
| Phase L1 | | | | | |
| Reactive Energy Import L1 Total | kvarh | 1 kvarh | 7340 | 4 | uInt64 |
| Reactive Energy Import L1 T1 | kvarh | 1 kvarh | 7344 | 4 | uInt64 |
| Reactive Energy Import L1 T2 | kvarh | 1 kvarh | 7348 | 4 | uInt64 |
| Reactive Energy Import L1 T3 | kvarh | 1 kvarh | 7352 | 4 | uInt64 |
| Reactive Energy Import L1 T4 | kvarh | 1 kvarh | 7356 | 4 | uInt64 |
| Reactive Energy Export L1 Total | kvarh | 1 kvarh | 7360 | 4 | uInt64 |
| Reactive Energy Export L1 T1 | kvarh | 1 kvarh | 7364 | 4 | uInt64 |
| Reactive Energy Export L1 T2 | kvarh | 1 kvarh | 7368 | 4 | uInt64 |
| Reactive Energy Export L1 T3 | kvarh | 1 kvarh | 7372 | 4 | uInt64 |
| Reactive Energy Export L1 T4 | kvarh | 1 kvarh | 7376 | 4 | uInt64 |
| Phase L2 | | | | | |
| Reactive Energy Import L2 Total | kvarh | 1 kvarh | 7380 | 4 | uInt64 |
| Reactive Energy Import L2 T1 | kvarh | 1 kvarh | 7384 | 4 | uInt64 |
| Reactive Energy Import L2 T2 | kvarh | 1 kvarh | 7388 | 4 | uInt64 |
| Reactive Energy Import L2 T3 | kvarh | 1 kvarh | 7392 | 4 | uInt64 |
| Reactive Energy Import L2 T4 | kvarh | 1 kvarh | 7396 | 4 | uInt64 |
| Reactive Energy Export L2 Total | kvarh | 1 kvarh | 7400 | 4 | uInt64 |
| Reactive Energy Export L2 T1 | kvarh | 1 kvarh | 7404 | 4 | uInt64 |
| Reactive Energy Export L2 T2 | kvarh | 1 kvarh | 7408 | 4 | uInt64 |
| Reactive Energy Export L2 T3 | kvarh | 1 kvarh | 7412 | 4 | uInt64 |
| Reactive Energy Export L2 T4 | kvarh | 1 kvarh | 7416 | 4 | uInt64 |
| Phase L3 | | | | | |
| Reactive Energy Import L3 Total | kvarh | 1 kvarh | 7420 | 4 | uInt64 |
| Reactive Energy Import L3 T1 | kvarh | 1 kvarh | 7424 | 4 | uInt64 |
| Reactive Energy Import L3 T2 | kvarh | 1 kvarh | 7428 | 4 | uInt64 |
| Reactive Energy Import L3 T3 | kvarh | 1 kvarh | 7432 | 4 | uInt64 |
| Reactive Energy Import L3 T4 | kvarh | 1 kvarh | 7436 | 4 | uInt64 |
| Reactive Energy Export L3 Total | kvarh | 1 kvarh | 7440 | 4 | uInt64 |
| Reactive Energy Export L3 T1 | kvarh | 1 kvarh | 7444 | 4 | uInt64 |
| Reactive Energy Export L3 T2 | kvarh | 1 kvarh | 7448 | 4 | uInt64 |
| Reactive Energy Export L3 T3 | kvarh | 1 kvarh | 7452 | 4 | uInt64 |
| Reactive Energy Export L3 T4 | kvarh | 1 kvarh | 7456 | 4 | uInt64 |

Energy Register 32bit, kWh Resolution

Active Energy

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|---------------------------------|------|------------|----------|-----------------|-----------|
| Phase L123 | | | | | |
| Active Energy Import L123 Total | kWh | 1 kWh | 8000 | 2 | uInt32 |
| Active Energy Import L123 T1 | kWh | 1 kWh | 8002 | 2 | uInt32 |
| Active Energy Import L123 T2 | kWh | 1 kWh | 8004 | 2 | uInt32 |
| Active Energy Import L123 T3 | kWh | 1 kWh | 8006 | 2 | uInt32 |
| Active Energy Import L123 T4 | kWh | 1 kWh | 8008 | 2 | uInt32 |
| Active Energy Export L123 Total | kWh | 1 kWh | 8010 | 2 | uInt32 |
| Active Energy Export L123 T1 | kWh | 1 kWh | 8012 | 2 | uInt32 |
| Active Energy Export L123 T2 | kWh | 1 kWh | 8014 | 2 | uInt32 |
| Active Energy Export L123 T3 | kWh | 1 kWh | 8016 | 2 | uInt32 |
| Active Energy Export L123 T4 | kWh | 1 kWh | 8018 | 2 | uInt32 |
| Phase L1 | | | | | |
| Active Energy Import L1 Total | kWh | 1 kWh | 8100 | 2 | uInt32 |
| Active Energy Import L1 T1 | kWh | 1 kWh | 8102 | 2 | uInt32 |
| Active Energy Import L1 T2 | kWh | 1 kWh | 8104 | 2 | uInt32 |
| Active Energy Import L1 T3 | kWh | 1 kWh | 8106 | 2 | uInt32 |
| Active Energy Import L1 T4 | kWh | 1 kWh | 8108 | 2 | uInt32 |
| Active Energy Export L1 Total | kWh | 1 kWh | 8110 | 2 | uInt32 |
| Active Energy Export L1 T1 | kWh | 1 kWh | 8112 | 2 | uInt32 |
| Active Energy Export L1 T2 | kWh | 1 kWh | 8114 | 2 | uInt32 |
| Active Energy Export L1 T3 | kWh | 1 kWh | 8116 | 2 | uInt32 |
| Active Energy Export L1 T4 | kWh | 1 kWh | 8118 | 2 | uInt32 |
| Phase L2 | | | | | |
| Active Energy Import L2 Total | kWh | 1 kWh | 8120 | 2 | uInt32 |
| Active Energy Import L2 T1 | kWh | 1 kWh | 8122 | 2 | uInt32 |
| Active Energy Import L2 T2 | kWh | 1 kWh | 8124 | 2 | uInt32 |
| Active Energy Import L2 T3 | kWh | 1 kWh | 8126 | 2 | uInt32 |
| Active Energy Import L2 T4 | kWh | 1 kWh | 8128 | 2 | uInt32 |
| Active Energy Export L2 Total | kWh | 1 kWh | 8130 | 2 | uInt32 |
| Active Energy Export L2 T1 | kWh | 1 kWh | 8132 | 2 | uInt32 |
| Active Energy Export L2 T2 | kWh | 1 kWh | 8134 | 2 | uInt32 |
| Active Energy Export L2 T3 | kWh | 1 kWh | 8136 | 2 | uInt32 |
| Active Energy Export L2 T4 | kWh | 1 kWh | 8138 | 2 | uInt32 |
| Phase L3 | | | | | |
| Active Energy Import L3 Total | kWh | 1 kWh | 8140 | 2 | uInt32 |
| Active Energy Import L3 T1 | kWh | 1 kWh | 8142 | 2 | uInt32 |
| Active Energy Import L3 T2 | kWh | 1 kWh | 8144 | 2 | uInt32 |
| Active Energy Import L3 T3 | kWh | 1 kWh | 8146 | 2 | uInt32 |
| Active Energy Import L3 T4 | kWh | 1 kWh | 8148 | 2 | uInt32 |
| Active Energy Export L3 Total | kWh | 1 kWh | 8150 | 2 | uInt32 |
| Active Energy Export L3 T1 | kWh | 1 kWh | 8152 | 2 | uInt32 |
| Active Energy Export L3 T2 | kWh | 1 kWh | 8154 | 2 | uInt32 |
| Active Energy Export L3 T3 | kWh | 1 kWh | 8156 | 2 | uInt32 |
| Active Energy Export L3 T4 | kWh | 1 kWh | 8158 | 2 | uInt32 |

Reactive Energy

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|-----------------------------------|-------|------------|----------|-----------------|-----------|
| Phase L123 | | | | | |
| Reactive Energy Import L123 Total | kvarh | 1 kvarh | 8200 | 2 | ulnt32 |
| Reactive Energy Import L123 T1 | kvarh | 1 kvarh | 8202 | 2 | ulnt32 |
| Reactive Energy Import L123 T2 | kvarh | 1 kvarh | 8204 | 2 | ulnt32 |
| Reactive Energy Import L123 T3 | kvarh | 1 kvarh | 8206 | 2 | ulnt32 |
| Reactive Energy Import L123 T4 | kvarh | 1 kvarh | 8208 | 2 | ulnt32 |
| Reactive Energy Export L123 Total | kvarh | 1 kvarh | 8210 | 2 | ulnt32 |
| Reactive Energy Export L123 T1 | kvarh | 1 kvarh | 8212 | 2 | ulnt32 |
| Reactive Energy Export L123 T2 | kvarh | 1 kvarh | 8214 | 2 | ulnt32 |
| Reactive Energy Export L123 T3 | kvarh | 1 kvarh | 8216 | 2 | ulnt32 |
| Reactive Energy Export L123 T4 | kvarh | 1 kvarh | 8218 | 2 | ulnt32 |
| Phase L1 | | | | | |
| Reactive Energy Import L1 Total | kvarh | 1 kvarh | 8300 | 2 | ulnt32 |
| Reactive Energy Import L1 T1 | kvarh | 1 kvarh | 8302 | 2 | ulnt32 |
| Reactive Energy Import L1 T2 | kvarh | 1 kvarh | 8304 | 2 | ulnt32 |
| Reactive Energy Import L1 T3 | kvarh | 1 kvarh | 8306 | 2 | ulnt32 |
| Reactive Energy Import L1 T4 | kvarh | 1 kvarh | 8308 | 2 | ulnt32 |
| Reactive Energy Export L1 Total | kvarh | 1 kvarh | 8310 | 2 | ulnt32 |
| Reactive Energy Export L1 T1 | kvarh | 1 kvarh | 8312 | 2 | ulnt32 |
| Reactive Energy Export L1 T2 | kvarh | 1 kvarh | 8314 | 2 | ulnt32 |
| Reactive Energy Export L1 T3 | kvarh | 1 kvarh | 8316 | 2 | ulnt32 |
| Reactive Energy Export L1 T4 | kvarh | 1 kvarh | 8318 | 2 | ulnt32 |
| Phase L2 | | | | | |
| Reactive Energy Import L2 Total | kvarh | 1 kvarh | 8320 | 2 | ulnt32 |
| Reactive Energy Import L2 T1 | kvarh | 1 kvarh | 8322 | 2 | ulnt32 |
| Reactive Energy Import L2 T2 | kvarh | 1 kvarh | 8324 | 2 | ulnt32 |
| Reactive Energy Import L2 T3 | kvarh | 1 kvarh | 8326 | 2 | ulnt32 |
| Reactive Energy Import L2 T4 | kvarh | 1 kvarh | 8328 | 2 | ulnt32 |
| Reactive Energy Export L2 Total | kvarh | 1 kvarh | 8330 | 2 | ulnt32 |
| Reactive Energy Export L2 T1 | kvarh | 1 kvarh | 8332 | 2 | ulnt32 |
| Reactive Energy Export L2 T2 | kvarh | 1 kvarh | 8334 | 2 | ulnt32 |
| Reactive Energy Export L2 T3 | kvarh | 1 kvarh | 8336 | 2 | ulnt32 |
| Reactive Energy Export L2 T4 | kvarh | 1 kvarh | 8338 | 2 | ulnt32 |
| Phase L3 | | | | | |
| Reactive Energy Import L3 Total | kvarh | 1 kvarh | 8340 | 2 | ulnt32 |
| Reactive Energy Import L3 T1 | kvarh | 1 kvarh | 8342 | 2 | ulnt32 |
| Reactive Energy Import L3 T2 | kvarh | 1 kvarh | 8344 | 2 | ulnt32 |
| Reactive Energy Import L3 T3 | kvarh | 1 kvarh | 8346 | 2 | ulnt32 |
| Reactive Energy Import L3 T4 | kvarh | 1 kvarh | 8348 | 2 | ulnt32 |
| Reactive Energy Export L3 Total | kvarh | 1 kvarh | 8350 | 2 | ulnt32 |
| Reactive Energy Export L3 T1 | kvarh | 1 kvarh | 8352 | 2 | ulnt32 |
| Reactive Energy Export L3 T2 | kvarh | 1 kvarh | 8354 | 2 | ulnt32 |
| Reactive Energy Export L3 T3 | kvarh | 1 kvarh | 8356 | 2 | ulnt32 |
| Reactive Energy Export L3 T4 | kvarh | 1 kvarh | 8358 | 2 | ulnt32 |

Momentary Values

Power

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|---------------------|------|------------|----------|-----------------|-----------|
| Active Power L123 | W | 1 W | 9000 | 2 | sFloat32 |
| Active Power L1 | W | 1 W | 9002 | 2 | sFloat32 |
| Active Power L2 | W | 1 W | 9004 | 2 | sFloat32 |
| Active Power L3 | W | 1 W | 9006 | 2 | sFloat32 |
| Reactive Power L123 | var | 1 var | 9010 | 2 | sFloat32 |
| Reactive Power L1 | var | 1 var | 9012 | 2 | sFloat32 |
| Reactive Power L2 | var | 1 var | 9014 | 2 | sFloat32 |
| Reactive Power L3 | var | 1 var | 9016 | 2 | sFloat32 |
| Apparent Power L123 | VA | 1 VA | 9020 | 2 | sFloat32 |
| Apparent Power L1 | VA | 1 VA | 9022 | 2 | sFloat32 |
| Apparent Power L2 | VA | 1 VA | 9024 | 2 | sFloat32 |
| Apparent Power L3 | VA | 1 VA | 9026 | 2 | sFloat32 |

Current

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|--------------|------|------------|----------|-----------------|-----------|
| Current L123 | A | 1 A | 9100 | 2 | sFloat32 |
| Current L1 | A | 1 A | 9102 | 2 | sFloat32 |
| Current L2 | A | 1 A | 9104 | 2 | sFloat32 |
| Current L3 | A | 1 A | 9106 | 2 | sFloat32 |

Voltage

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|---------------|------|------------|----------|-----------------|-----------|
| Voltage L1-N | V | 0.1 V | 9200 | 2 | sFloat32 |
| Voltage L2-N | V | 0.1 V | 9202 | 2 | sFloat32 |
| Voltage L3-N | V | 0.1 V | 9204 | 2 | sFloat32 |
| Voltage L1-L2 | V | 0.1 V | 9206 | 2 | sFloat32 |
| Voltage L2-L3 | V | 0.1 V | 9208 | 2 | sFloat32 |
| Voltage L3-L1 | V | 0.1 V | 9210 | 2 | sFloat32 |

Power Factor and Frequency

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|-----------------|------|------------|----------|-----------------|-----------|
| Power Factor L1 | Cos | 1 Cos | 9300 | 2 | sFloat32 |
| Power Factor L2 | Cos | 1 Cos | 9302 | 2 | sFloat32 |
| Power Factor L3 | Cos | 1 Cos | 9304 | 2 | sFloat32 |
| Frequency | Hz | 1 Hz | 9310 | 2 | sFloat32 |

With EMU Professional Compatible Read-Out



Note: The EMU Professional II works with unsigned data types while the EMU Professional/Allrounder works with signed data types.

Energy Register

| Description | Unit | Resolution | Register | No. of Register |
|-------------------------------------|------|------------|----------|-----------------|
| 32 bit | | | | |
| Active Energy Consumption Total | Wh | 1 Wh | 4631 | 2 |
| Active Energy Consumption Tariff 1 | Wh | 1 Wh | 4633 | 2 |
| Active Energy Consumption Tariff 2 | Wh | 1 Wh | 4635 | 2 |
| Active Energy Supply Total | Wh | 1 Wh | 4637 | 2 |
| Active Energy Supply Tariff 1 | Wh | 1 Wh | 4639 | 2 |
| Active Energy Supply Tariff 2 | Wh | 1 Wh | 4641 | 2 |
| Inductive Reactive Energy Total | varh | 1 varh | 4643 | 2 |
| Inductive Reactive Energy Tariff 1 | varh | 1 varh | 4645 | 2 |
| Inductive Reactive Energy Tariff 2 | varh | 1 varh | 4647 | 2 |
| Capacitive Reactive Energy Total | varh | 1 varh | 4649 | 2 |
| Capacitive Reactive Energy Tariff 1 | varh | 1 varh | 4651 | 2 |
| Capacitive Reactive Energy Tariff 2 | varh | 1 varh | 4653 | 2 |
| 32 bit | | | | |
| Active Energy Consumption Total | Wh | 1 Wh | 4202 | 4 |
| Active Energy Consumption Tariff 1 | Wh | 1 Wh | 4230 | 4 |
| Active Energy Consumption Tariff 2 | Wh | 1 Wh | 4246 | 4 |
| Active Energy Supply Total | Wh | 1 Wh | 4282 | 4 |
| Active Energy Supply Tariff 1 | Wh | 1 Wh | 4310 | 4 |
| Active Energy Supply Tariff 2 | Wh | 1 Wh | 4326 | 4 |
| Inductive Reactive Energy Total | varh | 1 varh | 4362 | 4 |
| Inductive Reactive Energy Tariff 1 | varh | 1 varh | 4390 | 4 |
| Inductive Reactive Energy Tariff 2 | varh | 1 varh | 4406 | 4 |
| Capacitive Reactive Energy Total | varh | 1 varh | 4442 | 4 |
| Capacitive Reactive Energy Tariff 1 | varh | 1 varh | 4470 | 4 |
| Capacitive Reactive Energy Tariff 2 | varh | 1 varh | 4486 | 4 |

Power

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|---------------------|------|------------|----------|-----------------|-----------|
| Active Power L123 | W | 1 W | 4528 | 2 | sInt32 |
| Active Power L1 | W | 1 W | 4522 | 2 | sInt32 |
| Active Power L2 | W | 1 W | 4524 | 2 | sInt32 |
| Active Power L3 | W | 1 W | 4526 | 2 | sInt32 |
| Reactive Power L123 | var | 1 var | 4536 | 2 | sInt32 |
| Reactive Power L1 | var | 1 var | 4530 | 2 | sInt32 |
| Reactive Power L2 | var | 1 var | 4532 | 2 | sInt32 |
| Reactive Power L3 | var | 1 var | 4534 | 2 | sInt32 |
| Apparent Power L123 | VA | 1 VA | 4544 | 2 | sInt32 |
| Apparent Power L1 | VA | 1 VA | 4538 | 2 | sInt32 |
| Apparent Power L2 | VA | 1 VA | 4540 | 2 | sInt32 |
| Apparent Power L3 | VA | 1 VA | 4542 | 2 | sInt32 |

Current and Voltage

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|---------------|------|------------|----------|-----------------|-----------|
| Current L123 | mA | 1 mA | 4598 | 2 | sInt32 |
| Current L1 | mA | 1 mA | 4592 | 2 | sInt32 |
| Current L2 | mA | 1 mA | 4594 | 2 | sInt32 |
| Current L3 | mA | 1 mA | 4596 | 2 | sInt32 |
| Voltage L1-N | V | 0.1 V | 4568 | 1 | sInt16 |
| Voltage L2-N | V | 0.1 V | 4569 | 1 | sInt16 |
| Voltage L3-N | V | 0.1 V | 4570 | 1 | sInt16 |
| Voltage L1-L2 | V | 0.1 V | 4571 | 1 | sInt16 |
| Voltage L2-L3 | V | 0.1 V | 4572 | 1 | sInt16 |
| Voltage L3-L1 | V | 0.1 V | 4573 | 1 | sInt16 |

Power Factor and Frequency

| Description | Unit | Resolution | Register | No. of Register | Data Type |
|-----------------|------|------------|----------|-----------------|-----------|
| Power Factor L1 | Cos | 0.01 Cos | 4624 | 2 | float |
| Power Factor L2 | Cos | 0.01 Cos | 4625 | 2 | float |
| Power Factor L3 | Cos | 0.01 Cos | 4626 | 2 | float |
| Frequency | Hz | 0.1 Hz | 4627 | 2 | float |

Examples for Modbus Read-Out

With Command-Line Interface

These Examples use Modpoll to read-out the registers.

Please make sure you entered the correct IP address of your meter.

More information on Modpoll command arguments can be found at <https://www.modbusdriver.com/modpoll.html>.

Energy Register

Active Energy Import Tariff 1 Total:

```
modpoll.exe -l -m tcp -t 4:int -i -f -r 5902 -c 1 10.255.255.119
```

Active Energy Export Phase L1 Tariff 2:

```
modpoll.exe -l -m tcp -t 4:int -i -f -r 6128 -c 1 10.255.255.119
```

Reactive Energy Export Total:

```
modpoll.exe -l -m tcp -t 4:int -i -f -r 7320 -c 1 10.255.255.119
```

Momentary Values

Active Power Total:

```
modpoll.exe -l -m tcp -t 2:float -i -f -r 9000 -c 1 10.255.255.119
```

Apparent Power Phase L3:

```
modpoll.exe -l -m tcp -t 2:float -i -f -r 9026 -c 1 10.255.255.119
```

Power Factor Phase L1:

```
modpoll.exe -l -m tcp -t 2:float -i -f -r 9300 -c 1 10.255.255.119
```

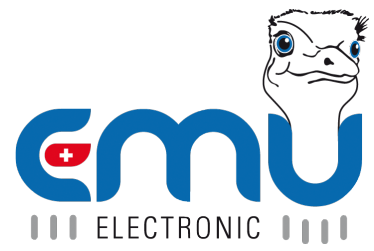
Information for Read-Out to a Loxone Miniserver

Be aware, that contrary to the EMU Professional/Allrounder, the EMU Professional II uses unsigned integers/floats. Registers with 2 and 4 registers used (32bit, 64bit respectively) need their register order reversed.

Example:

| Active Energy Consumption Total | |
|---------------------------------|-------------------------------|
| Register: | 4630 |
| Command: | 3 – Read holding register(4x) |
| Data Type: | 32-bit signed integer |
| 2 Register for 32-bit: | yes |
| Register Order: | yes |
| Byte Order: | no |
| Unit: | Wh |

| | |
|---|-------------------------------|
| <input type="checkbox"/> Visualisierung | |
| <input type="checkbox"/> Verwenden | |
| Erlaubte Benutzer lokal | Alle |
| Erlaubte Benutzer Internet | Alle |
| Kategorie | Nicht zugeordnet |
| Raum | Nicht zugeordnet |
| Bewertung | ☆☆☆☆☆☆☆☆☆☆ |
| <input type="checkbox"/> Als Favorit anzeigen | |
| <input type="checkbox"/> Fehlerausgang anzeigen | |
| IO-Adresse | 4630 |
| Befehl | 3 - Read holding register(4x) |
| Datentyp | 32-bit signed integer |
| <input checked="" type="checkbox"/> 2 Register für 32-bit | |
| <input checked="" type="checkbox"/> Registerreihenfolge | |
| <input type="checkbox"/> Byte-Reihenfolge | |
| Abfragezyklus | 5 |
| <input type="checkbox"/> Korrektur | |



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