

GE Digital Energy Hydran™ M2 Accessories



Accurate knowledge of transformers is essential for all electrical networks. This information allows valuable asset capabilities to be maintained and expensive failures to be avoided. To allow companies to meet this requirement the right equipment must be available. The Hydran M2 is a continuous on-line dissolved gas and moisture in oil monitoring device that alerts personnel of developing fault conditions in their transformer. It provides key monitoring information and minimizes the risk of unplanned outages.

16529



Analogue Output Card, 4-20mA

Analogue output card, 4-20mA, load up to 500 ohms (10V max), isolated to 2000Vac RMS.

Used to output data in an analogue format usually to a SCADA system. Range of values is equated to a current between 4mA and 20mA so that actual value can be deciphered. Used to output ppm gas value, gas rate of change, humidity level and average humidity level.

Note: maximum of 4 cards can be installed, combination of either input and output cards.

16792



Analogue Output Card, 0-1mA

Analogue output card, 4-20mA, load up to 2,500 ohms (10V max), isolated to 2000Vac RMS.

Older and now much less common configuration of the card. As above but with the range of values equated to a current between 0mA and 1mA.

Note: maximum of 4 cards can be installed, combination of either input and output cards.

16528



Analogue Input Card, 4-20mA

Analogue input card, 4-20mA, load up to 500 ohms (10V max), isolated to 2000Vac RMS.

Used to connect an analogue sensor with 4-20mA output (example: oil temperature sensor) so that its data can be read by the Hydran M2 and either alarms set on its value or the value outputted as a Modbus® or DNP3 register.

Note: maximum of 4 cards can be installed, combination of either input and output cards.

17464



Dual Digital Input Card, with wetting circuit

Card with 2x digital inputs for dry contact relay outputs, 24Vdc internal wetting provided, isolated to 2000Vac.

Used to connect one or two dry contact relay outputs so that its status can be read by the Hydran M2 and either alarms set on its status or the status outputted as a Modbus or DNP3 register.

Note: maximum of 4 cards can be installed, combination of either input and output cards.

18447



Transformer Models enabled

Multiprotocol (Modbus or DNP3) firmware with models enabled.

Note that no sensors are included.

They must be added each individually and separately.

17046



Ethernet Card, RJ45 connector, 10/100 Mbits/s

Local Area Network (LAN) Ethernet communication card, 10 or 100Mbits/s, for copper wire network with RJ45 type connector.

Used to connect to a copper wire local area network and transmit data using the onboard communication protocols available.

Note: only one of Ethernet or PSTN modem card can be used.

16868



PSTN Analogue Modem Interface Card

PSTN analogue modem V92/56K.

Used to connect and transmit data using a modem on a traditional copper wire telephone PSTN network (Public Switching Telephone Network).

Note: only one of Ethernet or PSTN modem or GPRS modem card can be used.

Request as CRC



GPRS Wireless Modem output

GPRS digital wireless modem 3G. Comes with outside mounted antenna.

Used to connect and transmit data using the wireless mobile phone network.

Note: only one of Ethernet or PSTN modem or GPRS modem card can be used.

18321



Fiber Optic Ethernet Output - ST Connector

Local Area Network (LAN) Ethernet communication card, 10 or 100Mbits/s, for Fibre Optic network with ST type connector.

Used to connect to a fibre optic local area network and transmit data using the onboard communication protocols available.

Note: Mounts on side of Hydran M2 but also utilizes the Ethernet card (17046) slot.

Request as CRC



IEC®61850 over TCP/IP (RJ45) - Internal

Connects to RS-485 serial output of the Hydran M2 and provides conversion of Modbus protocol to IEC 61850 protocol over TCP/IP LAN connection with copper Ethernet cable RJ-45 connector.

Note: mounts on side of the Hydran M2 but also utilizes the Ethernet/Modem card slot. The Hydran M2 must be running Modbus protocol.

Request as CRC



GPRS Wireless Modem - in separate enclosure

GPRS digital wireless modem in a separate AC mains powered enclosure. Comes with outside mounted antenna. SIM card required.

Used to connect and transmit data using the wireless mobile phone network. Works on GSM/GPRS network (only AT&T® network in the USA). Transmits whatever protocol is running on the Hydran M2. Ideal for daisy-chaining multiple Hydran M2 units to only one modem. Connect wherever GPRS mobile phone network is available.

Request as CRC



Wireless Cell Modem for USA - in separate enclosure

Orbit LTE 3G/4G Verizon® in a separate AC mains powered enclosure. Comes with outside mounted antenna.

Same as above but used to connect and transmit data using the Verizon cell phone network in the USA only. Contract required.

Request as CRC



SMS Text sender - in separate enclosure

AC mains powered enclosure. Connects to the dry contact relay outputs of the Hydran M2 and sends a specific programmable SMS/Text message to a pre-programmed number, up to four dry-contact relay alarms triggering. Requires a GSM/GPRS network (only AT&T network in the USA) and a SIM card.

Ideal when no SCADA system or communication infrastructure is present to connect to or you simply want to receive a specific message on your mobile phone whenever an alarm has been triggered by the monitor.

Request as CRC



IEC 61850 over TCP/IP (ST FO) - in separate enclosure

AC mains powered external enclosure with protocol converter and fibre optic output module.

Connects to RS-485 serial output of the Hydran M2 and provides conversion of Modbus protocol to IEC 61850 protocol over TCP/IP LAN connection, and through the use of a mini-switch, provides both Ethernet copper cable output (RJ-45 connector) and Ethernet fiber optic cable output (ST connector).

Note: internal option cannot provide fibre optic output, so this option must be used instead.

18065



Finned Heatsink Adapter M2, 1.5"/1.5"

The sensor of the Hydran M2 can dry/age prematurely if it is exposed to high oil temperatures. This finned heat sink adapter lowers the temperature of the oil before it reaches the sensor. Fits just in front of the Hydran M2.

Its use is highly recommended and is mandatory when oil temperature is likely to exceed 90°C or ambient temperature is likely to exceed 40°C.

17603



Valve Adapter M2, 1" Male NPT to 1.5" Female NPT

The Hydran M2 has a 1.5" Male NPT fitting to screw into a 1.5" Female NPT valve on the transformer.

This valve adapter converts a 1" NPT transformer valve into a 1.5" Female NPT valve so that the Hydran M2 can be installed.

16296



Valve Adapter M2, 2" Male NPT to 1.5" Female NPT

The Hydran M2 has a 1.5" Male NPT fitting to screw into a 1.5" Female NPT valve on the transformer.

This valve adapter converts a 2" NPT transformer valve into a 1.5" Female NPT valve so that the Hydran M2 can be installed.

M2 MMP SO



Moisture Models Pack - special new unit purchase offer

This kit contains the multiprotocol firmware with models enabled (18447) plus the following sensors: 1x top oil temperature sensor (13298), 1x load CT (16504) and 2x analogue input cards (16528) for the two sensors.

This will enable to run most IEEE® moisture related mathematical transformer models (like apparent power, calculated hot spot temperature, moisture in paper, insulation aging).

M2 MMP UP



Moisture Models Pack - offer to upgrade existing units

Same as above but for upgrading an existing unit.

More sensors can be added (like an extra bottom oil temperature sensor and an ambient temperature sensor) to enhance the models but these must be selected and added separately.

13298



Magnetic Mount Temp Sensor - 4-20mA output

This temperature sensor is held by strong magnets on the side of the transformer tank. It provides a 4-20mA output that can be read by the analogue input card 16529.

It is used to measure oil temperature in that location, usually at the top and bottom of the main tank of the transformer, but also in any other tank (e.g. OLTC tank).

16504



Split-core load CT (Range: 0-2A or 0-5A), 4-20mA

This small current transformer (CT) is used to measure the load on the transformer by clamping it on a cable in the transformer cabinet.

Current range is selectable: 0-2A or 0-5A.

It provides a 4-20mA output that can be read by the analogue input card 16529.

14258



Load CT (Range: 0-10A or 0-20A or 0-50A), 4-20mA

This small current transformer (CT) is used to measure the load on the transformer by clamping it on a cable in the transformer cabinet.

Current range is selectable: 0-10A or 0-20A or 0-50A.

It provides a 4-20mA output that can be read by the analogue input card 16529.

13733



Ambient Temp sensor (Range: -50C to +50C), 4-20mA

This is an externally mounted temperature sensor. It provides a 4-20mA output that can be read by the analogue input card 16529

Used to measure external ambient temperature seen by the transformer in order to correlate DGA and moisture information.

Range: -50°C to +50°C.

14255



Immersed Oil Temp Sensor RTD PT100 (in housing)

This is a temperature sensor for measuring transformer oil temperature. It provides a PT100 output.

It is only used by transformer manufacturer for mounting through the transformer tank wall, and fits inside the housing 14257.

14257



Thermowell Housing for Immersed Oil Sensor (in wall)

This is an oil tight housing for the temperature sensor 14255.

It is only used by transformer manufacturer for mounting through the transformer tank wall.

14256



Converter RTD PT100 to 4-20mA (installed in Tx cabinet)

This is an oil tight housing for the temperature sensor 14255.

It is only used by transformer manufacturer for mounting through the transformer tank wall.

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